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ABSTRACT

These conference proceedings include 88 presentations, workshops, and poster sessions. Topics include child support guidelines, food quality and safety, family resource management expert systems, airline deregulation, home-based employment, consumer education, Europe in the 1990s, low-reading level consumers, children as consumers, promotional strategies, recycling, insurance issues, consumer attitudes, and the Consumer Expenditure Survey microdata. Presentations with a specific education/training focus are as follows: "Effects of Children on the Single Mother's Labor Force Participation" (Xiao, Olson); "Employment Status of Wife and Service Expenditures" (Dardis et al.); "Overview of an Expert Systems Laboratory" (Hanna); "Research Opportunities in Expert Systems Development" (Burns); "Working at Home" (Walker et al.); "Homebased Work and Management Practices" and "Child Care and Homebased Employment" (Heck et al.); "Home Based Work and Family Functioning" (Owen et al.); "Consumer Economic Graduate Study in the United States" (Douthitt); "Undergraduates Doing Research in Courses" (Wang, Dolan); "National Survey on the Status of Consumer Education in U.S. Schools Grades K-12" (Glade); "Benefits of Consumer Education" (Knapp); "Gender Differences in Coping Styles" (Haldeman, Crawford); "Teaching Writing Skills and Critical Thinking in Consumer Education" (Forgue); "Stimulating Learning in Consumer Education by Practical Application of Course Concepts" (Junk); "Techniques for Evaluating Student Progress in Consumer Education" (Pritchard); "The Education of Central France" (Havlicek); "Reaching and Teaching Low Reading Level Consumers" (Lloyd); "Workplace Education for Disadvantaged Learners" (Soifer); "Consumer Talk: Development of a Canadian Low-Literacy Consumer Education Program" (Baron); "Interest in Consuming Interests of Youth: Research, Marketing, Education and Public Policy Perspectives" (Swanson); "Money Management Education...It Works" (Myer, Haldeman); "Educating Consumers to Take Control of Life and Death Health Care Decisions" (Stum); "Financial Management Literacy for American Youth" (Schuchardt et al.); and "Efficiency and Equity in the Delivery of Public Education" (Soberon-Ferrer). (NLA)

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American Council on Consumer Interests

37th Annual Conference
April 3-6, 1991
Cincinnati, Ohio

The Proceedings

Virginia Haldeman, Editor

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PROCEEDINGS

37th Annual Conference

of the

AMERICAN COUNCIL ON CONSUMER INTERESTS

April 3-6, 1991
Cincinnati, Ohio

Edited by

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AMERICAN COUNCIL ON CONSUMER INTERESTS
37TH ANNUAL CONFERENCE
APRIL 3-6, 1991

Cincinnati, Ohio

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President, ACCI 1990-1991

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Local Arrangements Chair

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FROM THE EDITOR

Cincinnati, Ohio was the site of the 37th Annual Conference of the American Council on Consumer Interests. Consumer educators and professionals from the United States, Canada, and Europe were privileged to attend the first Esther Peterson Policy Forum as well as a reception honoring the first Assistant to the President for Consumer Affairs.

Of the 41 manuscripts submitted for consideration as refereed papers, 25 were accepted (39% rejection rate). The refereed papers addressed a wide range of topics including consumer purchasing behavior, impacts on family financial resources, elderly consumers, food expenditures, and insurance issues.

Eighteen abstracts were submitted for consideration for participation in the refereed poster session. Thirteen were accepted (28% rejection rate). The posters addressed such diverse topics as money management, recycling, and consumer attitudes.

Nineteen session proposals were submitted. The program included seven invited paper sessions where 24 papers were presented; six workshops with 23 presenters, one panel presentation with six presenters, and five roundtable discussions.

All annual conference program participants were invited to submit camera-ready manuscripts for inclusion in this publication. The cooperation of the authors and their support staffs are sincerely appreciated. Without their efforts, the Proceedings could not be produced in a timely fashion.

The program chairman, Claudia Peck, is to be commended for her endeavors which brought together an informative, challenging, and enjoyable conference. The efforts of the manuscript reviewers are greatly appreciated. The quality of the conference was augmented by their insightful comments and evaluations. Special appreciation is extended to Golden Jackson and her local arrangements committee. The physical facilities were excellent and enhanced the conference atmosphere.

To Anita Metzen, who was most gracious and helpful in guiding a first-time editor through the maze of preparation and production: thank you for your patience and support! To my administrative assistants, Sherry Stevens and Charla Purinton, and student workers, Lisa Willson and Beth Weldon, who kept track of expenses, organized, formatted, collated, typed and retyped, stuffed envelopes, telephoned, held my hand, and prevented many headaches: I extend my heartfelt gratitude and appreciation. Thank you, all, for making my job as editor, much easier and even enjoyable!

Virginia A Haldeman
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University of Nevada, Reno

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Effects of Children on the Single Mother's Labor Force Participation

Jing-Jian Xiao, Geraldine I. Olson, Oregon State University[1]

An economic approach is used to investigate effects of children on single mother's labor force participation. Results of logit analyses showed that compared to her married counterpart, the single mother is more likely to participate in the labor force when she is older, or has more education, but less likely when considering number and age of children. Age differential between mother and first child negatively influences labor force participation of single and married mothers.

The presence of children influences women's labor force participation, which can be observed in both married-couple (Gordon and Kammeyer, 1980) and single mother families (Rexroat, 1990). Compared to married mothers, single mothers face dual responsibilities for parenting children and earning the family income with little outside support (Weiss, 1979). Little research is found to address the unique characteristics of single-mother's labor force participation, even though this knowledge will be very helpful in the formulation of related education programs and policies to assist vulnerable single mothers and their children to achieve a better life.

The purpose of this paper is to investigate any unique effects of children on single mother's labor force participation, compared to her married counterpart. An economic approach, holding to the basic assumptions of maximizing behavior, market equilibrium, and stable preference, as proposed by Becker (1976) and developed by Gronau (1973), will be followed in this study.

The mother's labor force participation is closely related with the mother's prices of market time and household time. Previous studies noted the influence of the presence of children on mothers' labor force participation, but they did not either provide direct evidence of the price women place on the household time (Cain, 1966; Mincer, 1962) , or concentrate on effects of children on the mother's labor force participation (Gramm, 1975; Gerner and Zick, 1983; Zick and Bryant,1983).

Gronau (1973) developed a unique method for predicting mothers' labor force participation considering the effects of children's age and number. He conceptually distinguished the difference of determinants between a mother's market time and household time. Another unusual feature of his approach is an explicit treatment of variation in preferences among the population (Hall, 1973).

To a great degree, this paper is a replication of Gronau's study in which most variables are specified as the same as Gronau's. But our study focuses on the single mother, while Gronau's concentrated on the married mother. Also, two important variables have been added to our empirical model: the spacing of various children and the timing of the first child relative to the mother's age. Becker (1981) notes these two factors as influencing life cycle stages, but ignores them when building his theory of demand for children. Gronau (1973) also mentions these two factors as relevant to the value of mother's time, but he does not incorporate them into his empirical model.

Theoretical Model

Becker (1965) made an important contribution to utility theory with his seminal article on the allocation of time. Because of his pioneering work, time, along with goods, is incorporated into utility theory, and household activities can be studied with this extended utility model. According to Becker (1965; 1981), a family is both a consuming unit and a producing unit. As a producing unit, a family produces commodities needed by family members. These commodities could be physical entities, psychological feelings, or some special, propinquiously produced goods, such as children. Becker believes that children as a "commodity" can be treated as durables for a family, but Gronau (1973) argues that it is more appropriate to take the services needed for raising children as

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[1] Doctoral Student and Associate Professor, Department of Human Development and Family Sciences. Dr. Martha Fraundorf, Oregon State, and Dr. Ramona Heck, Cornell, provided very helpful comments without contributing to any remaining errors.

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the home produced commodity. For the purpose of this study, Gronau's definition is employed.

In order to produce commodities, a family combines market goods, family member's time, and human capital into household production. Assuming that a single mother family produces two commodities, let C=children, and Z=other commodities. In any given period, the utility equation of the family becomes,

$$U=U(C, Z).$$

Assuming that children do not contribute to the production of the commodity, the above utility equation is subject to the following budget constraint:

$$\pi_c(X_c, T_c)C+\pi_z(X_z, T_z)Z=I,$$

where, I is the full income of the family, $\pi_c(X_c, T_c)$ is the price of children, which is the function of the time and goods provided by the single mother for rearing children. Then, $\pi_z(X_z, T_z)$ is the price of producing other commodities, which is a function of the mother's time and money (for market goods) used in household production.

Given π_c, π_z and I, the optimal quantities of C and Z are determined by the budget constraint and the usual marginal utility condition:

$$MU_c/MU_z=\pi_c/\pi_z.$$

The demand for children could depend on the relative price of children and full income. Here children are assumed to be normal goods, which implies that an increase in the relative price of children will decrease the demand for children. Because the price of children is a function of the mother's time and money (used to buy market goods), characteristics relevant to children that influence time and goods needed for rearing children will influence the mother's labor force participation.

Before discussing the relationship of the value of the single mother's time and characteristics of children, we should clarify the determinants of the value of the single mother's time. According to Gronau (1973), women's time is distributed between two sectors: nonmarket and market. In the market, the supply of women's time responds to the wage rate. But for women only in the nonmarket sector, the supply of women's time is infinitely inelastic, and the shadow price of women's time, in the absence of market opportunities, is demand determined.

The determinants of the demand for women's time in the household consists of the derived demand for time used in each of its household activities, which in turn depends on the commodity prices, which depend on the prices of time and goods inputs to produce the commodity, and the technology employed. A change in any of these parameters will shift the derived demand curve and change the shadow price of time. All possible influential factors may be summarized by the woman's characteristics such as her age, education level, wage rate or the value of time, and her environment's characteristics, such as other family income, and those of her children and husband. In the case of a single mother family, the husband's effect is ignored even though the ex-husband, the late husband, or the boyfriend will have possible effects. This treatment is reasonable because even in a married-couple family, the husband's effect on the value of the wife's time is much smaller than the effect which results from the wife's characteristics (Gronau, 1973).

Some characteristics of women result in a change of productivity, which in turn influence the value of her time. "Home experience" is the variable one would like to use to capture the effect of "on-the-job training" on the mother's value of time. Age may be a proxy for this variable. Education is another possible source of change in productivity. It is difficult to predict the effect of the mother's age and education however, because of the complex relationship between time demand and changes in productivity (Gronau, 1973).

If production functions are linear homogeneous, it has been shown that an increase in the initial endowment of nonhuman capital increases the demand for all inputs and the shadow price of mother's time (Gronau, 1971). If this notion can be applied in the case of the single mother, other family income will influence the value of her time. A difference between the single mother and the married mother should be noted here. In a married-couple family the mother's income usually is one of two financial sources (the other is the father's income). But in a single mother family the financial source is mainly the mother's income. Thus married family income, excluding mother's earning, is usually larger, perhaps much larger, than that of a single mother family. There is some evidence that married family income, excluding mother's earning, has a positive effect on the value of the mother's time (Gronau, 1973). In terms of the single mother family. Becker (1981) suggests the same relationship by addressing the income effect on the demand for children.

Now we are ready to analyze the effect of children on the value of mother's time. If a child is an absolute home-time-intensive commodity (time-intensive commodity, in short), which means,

$$X_c=0,$$

the mother's labor force participation behavior will be influenced mainly by the time constraints.

If a child is an absolute market-goods-intensive commodity (goods-intensive commodity, in short), which means,

$$T_c=0,$$

the mother's behavior will be influenced mainly by the income constraints. In the real world, the inputs of rearing a child will be some combination of time and goods. But some characteristics of children do influence the combination of time and goods, and will bias the combination toward a time-intensive commodity or a goods-intensive commodity. It follows that these characteristics will influence the value of the mother's time and the labor force participation of the mother.

The number and age of children will influence the amount of time and goods used for rearing children. The increase of number of children will demand more time and goods offered by the single mother. Because of the relative scarcity of time, the price of time of the mother will be more precious. Children in different age groups have different demands for time and goods inputs. A younger child seems more likely to be a time-intensive commodity, while an older child becomes more independent in producing services for him/her self, but also becomes a more goods-intensive. Gronau's (1977) explanation of this phenomenon is that the profitability of home production diminishes and, eventually, the family relies solely on market (and publicly provided goods, such as schools) on the margin. A single mother will be more likely to stay home when her children are young and more likely to participate in the labor force when her children grow older.

Timing is defined as the difference between a mother's age and her first child's age. It seems that the greater this age differential, the more possible it becomes for the mother to stay home to rear children. Longer timing implies a larger accumulation of wealth so that she can afford to stay home. However, an implied longer working experience that results in a higher wage rate offer in the labor market could, conceivably, have the opposite effect.

Spacing is defined here as the average interval between various children. Because closer spacing results in benefits from economies of scale both in terms of time and goods, and decreases the relative price of children, it will influence the value of the mother's time. However, it is hard to predict the direction of the effect of spacing without considering other characteristics of children. Time and goods benefit from closer spacing may be larger when children are younger than when they grow older. Variations in timing may also differentially affect the quantity of benefits resulting from closer spacing. A previous study shows that spacing of children in two-parent two-child households negatively influenced the mothers' potential wage rate (Zick and Bryant, 1983), which implies a negative effect of this variable on the mothers' labor force participation.

In summary, the determinants of the value of single mother's time could be mother's age, education, other family income (excluding the mother's earning), number of children, timing of the first child, and spacing of various children.

Empirical Model

Estimating the value of single mother's time follows an approach proposed by Gronau (1973). A basic assumption of this approach is that the price of time in the nonmarket sector (household) assigned to women in the labor force is the same as that for women out of the labor force. Assume that W is the price of time for nonmarket sector women with certain characteristics, μ is the mean value of time of all women sharing the set of nonmarket characteristics, and ϵ is the random deviation from this mean. We have:

$$W=\mu+\epsilon.$$

Assuming that W* is the potential wage, the woman participates in the labor market if W*>W, that is, if

$$W^*-\mu\geq\epsilon,$$

and otherwise she remains a full-time homemaker.

Based on the discussion in the

previous section, we propose that the mean price of a woman's time is associated with her age (A), education (E), other family income (I), number of children (C), timing of the first child (T), and spacing of various children (S), and assume that these variables affect μ in an additive fashion:

$$\mu=\beta_0+\beta_1A+\beta_2E+\beta_3I+\beta_4C+\beta_5T+\beta_6S.$$

The mother participates in the labor force if

$$W^*-(\beta_0+\beta_1A+\beta_2E+\beta_3I+\beta_4C+\beta_5T+\beta_6S)\geq\epsilon.$$

If ϵ has a Weibull distribution, a logit model can be applied, and the maximum-likelihood estimators β_i (i=0, 1, ..., 6) will be gained (Chow, 1983).

Since W^* is usually unknown, assume that we know the mean μ^* and ϵ^*, the random deviation of the potential wage of women with one of certain market characteristics (such as age and education), where

$$W^*=\mu^*+\epsilon^*.$$

In this case, the prerequisite for entry into the labor force is,

$$\mu^*-\mu\geq\epsilon-\epsilon^*=\epsilon'.$$

If ϵ and ϵ^* are independent Weibull, we can still apply the logit analysis (Chow, 1983).

Usually μ^* is also unknown. Gronau (1973) offered three ways to estimate μ^*: (1) assuming μ^* is a function of the woman's age and education, (2) assuming μ^* is the average wage rate of the women in the sample, (3) estimating μ^* from data on wage rates and labor-force participation rates. Because Gronau's results were very similar when these three methods were compared, only the first approach is used in this paper. The relationship between the mean wage offer and mother's age and education is postulated as follows,

$$\mu^*=\alpha_0+\alpha_1A+\alpha_2E.$$

When this relationship is introduced into the prerequisite of the entry into the labor force, we have,

$$-[(\beta_0-\alpha_0)+(\beta_1-\alpha_1)+A(\beta_2-\alpha_2)E$$
$$+\beta_3I+\beta_4C+\beta_5T+\beta_6S]\geq\epsilon'.$$

We can apply the logit analysis to estimate

$$X=a_0+a_1A+a_2E+a_3+a_4C+a_5T+a_6S,$$

to obtain the maximum likelihood estimators a_i for $(\beta_i-\alpha_i)$ (i=0, 1, 2), and a_i for β_i (i=3,4,5,6). We can estimate the effects of all these variables on the probability of mother's labor participation. However, we can not separate the effect of mother's age and education on the mean price of time from their effect on the mean wage offer (Gronau, 1973).

Estimations

The data used in this study are from the March 1988 Current Population Survey (Bureau of Census, 1988). Single mothers having at least one child under 18 are chosen and a sample of 3,729 is included in this study. Singles include widowed (8.4%), divorced (45.6%), separated (20.4%), and never married (25.6%).

In order to make comparisons, we also do a logit analysis on a sample of married women, with the presence of spouses and children under 18, from the same data set. The sample size is 15,849 and variable specifications are the same as those used in the single mother's sample, with minor necessary adjustments.

The dependent variable in this study is categorical: 1 means the mother is in the labor force (having a full-time job, a part-time job, or actively looking for a job), and 0 means the mother is out of the labor force (full-time student, homemaker, retiree, etc.). Independent variables are defined as follows. Other family income equals the family income from all sources minus mother's earning. Mother's age is defined by three dummy variables, with mother's age group 30-49 as a base. Mother's education is also defined by three dummy variables, with mother's education group "high school" as a base. Numbers of children in various age groups are represented by four variables.

The timing of the first child is defined as the difference between the age of the mother and the age of her oldest child living in the household. The spacing of various children is defined as,

$$\frac{\text{oldest child's age-youngest child's age}}{\text{family size - 2.}}$$

A mother with one child is assigned a value of 0.

Results and Discussion

The results from the sample of married mothers (Table 1) confirm Gronau's findings (1973) in terms of direction of effects. The results from the sample of single mothers (Table 1) are very similar to those found in the sample of married mothers, but there

Table 1
Determinants of Mothers' Labor Force Participation

Variable	Unit	Logit Coefficients	
		Single	Married
Constant		2.3744*	2.6831*
Other income	$10K/yr	-.3623*	-.1440*
Age<30	Dummy	-.5303*	-.3804*
Age>49	Dummy	-.0994	-.4246*
Ed-elem.	Dummy	-1.4266*	-.8618*
Ed-college	Dummy	1.1303*	.6723*
Child<3	Number	-1.0124*	-.7621*
Child 3-5	Number	-.6856*	-.5538*
Child 6-11	Number	-.3864*	-.3150*
Child 12-17	Number	-.1858*	-.1976*
Timing	10 yrs	-.2197*	-.3732*
Spacing	1 yr	-.0179	-.0061
Likelihood ratio test		3824*	18914*
Sample size		3729	15849

*Significant at the .05 level

are some deviations which suggest the unique behavior of single mothers.

Other family income negatively affects both types of mothers' labor force participation. This negative effect on the single mother is over twice that for the married mother, which implies the financial vulnerability of the single mother.

Married mother's age usually has an inverted U-shape effect on labor force participation. But in the case of single mothers, the "age 50+" group does not show a difference from the "age 30-49" group. This suggests that the value of single mothers' time does not increase when they get older. Perhaps the average income of older single mothers is lower relative to older married mothers, so that these single mothers have to work to obtain adequate income.

Education shows a positive effect on both types of mothers' labor force participation. The intensity of the education effect on the single mother is stronger than that of the married mother. Thus, the value of time in household production is relatively lower for single mothers who are older and better educated, when compared to her married counterpart.

Composition of children's age and number has negative effects on mothers' labor force participation. But it seems very clear that the effects are not evenly distributed between children's different age groups. Younger children show larger effects than older children. In Gronau's study, children of age 12-17 show significant positive effects on the married mother's labor force participation, a finding we did not replicate. Comparatively, we do observe that the single mother is more likely to stay home than is the married mother as a result of number of children in several age groups (especially children under 6), other variables held constant. Perhaps the married mother benefits from her husband's time substitute, while the single mother lacks this time grant, or any other substitute.

Timing of the first child shows a negative effect on both types of mothers' labor force participation. A possible explanation is that the later a woman rears a child, the more precious the child, and the higher the quality of desired inputs. This is consistent with Becker's (1981) theory of the tradeoff of quantity and quality of children.

Spacing does not show an influence on mothers' labor force participation but the coefficients have negative signs which are consistent with a previous study (Zick and Bryant, 1983). The failure to find spacing effects may come from three sources. The first one is the limitation of the data set. The average number of children under 18 in this sample is two. The second is that spacing can not be observed in a completed series of children in these families, but only among those born to date and living at home. The third is that spacing does not affect behavior independently but interacts with other variables to influence behavior.

Using estimated logit coefficients, we calculated probabilities of "average" mothers' labor force participation (Table 2). Basically, the probability of labor force participation is almost 75 percent for the "average" single mother, in contrast to 70 percent for the "average" married mother. Given other conditions, the single mother is more likely than her married counterpart to work out of the home in terms of her age, or composition of children's age and number. But in terms of mothers' educational attainment, the single mother is more likely to stay home when she has less than a high school diploma, and is more likely to work out when she has been educated in college.

Marginal changes of the probabilities of mothers' labor force participation are calculated in two ways. For a categorical variable, the changed probability is the difference between those of two consecutive groups, while for a continuous variable, the change is figured following Pindyck and Daniel (1981).

Table 2
Predicted Probabilities of Mother's Labor Force Participation

Variable	Single	Married
Average Mother*	**.746**	**.691**
Mother's age		
<30	.634	.605
30-49*	**.746**	**.691**
>49	.727	.594
Mother's ed.		
elementary	.414	.486
high school*	**.746**	**.691**
college	.901	.814
No. of children by age		
<3	.655	.636
3-5	.724	.682
6-11	.780	.732
12-17	.812	.754

*** Data in bold represent probabilities of "average" mothers.** Representative values of an "average" single mother: age 30-49, annual other family income $4,977, high school finished, with one child age 6-11 and one child age 12-17, first childbearing age 23, and having her second child 2.1 years later. An "average" married mother has the same characteristics as those of the single mother, except for the annual other family income $31,547, first childbearing age 24, and having her second child 2.4 years later.

Table 3
Marginal Changes of Predicted Probabilities of Mother's Labor Force Participation

Change	Single	Married
Income:+$5,000	-.034	-.015
Mother's age:		
<30 to 30-49	.113	.086
30-49 to >49	-.019	-.097
Mother's ed.:		
elem.to high schl.	.332	.205
high schl.to coll.	.155	.123
No. of children by age:		
+1 child<3	-.192	-.163
+1 child3-5	-.130	-.118
+1 child6-11	-.073	-.067
+1 child12-18	-.035	-.042
Timing: +10 year	-.042	-.080
Spacing: +1 year	-.003	-.001

Results (Table 3) showed that the single mother is more likely to stay home when other family income increases by $5,000, she has one more child under 12 or has her next child one year later; while she is more likely to work out when she gets older, and has postponed her first childbearing for 10 year. Education showed dramatic influences on marginal changes of the probabilities of single mother's labor force participation. Given other conditions, the odds of the single mother's participating in the labor force will be increased by 33 percent if she enters high school. The same figure for the married mother is 20.5 percent.

Table 4
Effects of Interaction Terms on Mothers' Labor Force Participation

Interaction Term	Logit Coefficients	
	Single	Married
Spacing &		
child's age<3	-.0196	.0147
child's age 3-5	-.0657*	-.0198
child's age 6-11	.0029	-.0118
child's age 12-17	.0020	-.0001
Mother's school year &		
child's age<3	.1211*	.0369*
child's age 3-5	.0506	.0120
child's age 6-11	.0535*	.0381*
child's age 12-17	.0789*	.0464*
Likelihood ratio test	3813*	18875*
Sample size	3729	15849

*Significant at the .05 level

Adding two sets of variables to the existing models, we examined interactions between mother's education, child spacing, and composition of children's age and number (Table 4).

The interaction of mother's schooling and number of children with ages younger than three or older than six positively influences the labor force participation of both types of mothers, a result consistent with Gronau's study (1973). These results suggest that the positive effects of mothers' education outweigh the negative effects of composition of children's age and number. The single mother is more likely than her married counterpart to stay home when she has more young children or a higher education level. This phenomenon is consistent with the notion that a woman with a higher education level will want higher quality children and will respond to the lack of quality time substitutes. The interaction of child spacing and the number of children in a given age group has no effect on the value of time of a married mother.

Summary and Recommendations

New information from findings of this study can be summarized as: compared to the married mother, the single mother is more likely to participate in the labor force when she gets older, or has a higher education level, but is more likely to stay home when considering number of children in different age groups. Another piece of new information is that the timing of the first child has a negative effect on labor force participation of both types of mothers.

Results of this study suggest

several issues for further investigation. Spacing of the first child does not show a significant effect on mothers' labor force participation in this study and in a previous research (Gerner and Zick, 1983). But this variable significantly influences mothers' price of house work time (Zick and Bryant 1983) and mothers' working hours (Gerner and Zick, 1983). This suggests that spacing may play a role in mothers' labor force participation. Perhaps children who have moved out of the household should be counted when specifying the spacing variable. Desired quality of children is not treated directly in this study because of the lack of necessary information, but it is very important factor for understanding mother's labor force participation. Becker (1981) proved, theoretically, that the trade-off between quantity and quality will influence the demand for children. A reasonable inference is that it also could influence the value of the mother's time. In this study, we use mothers' age and education to serve two functions: to determine the price of time of mothers in the nonmarket sector, and to estimate the potential wage offer in the market sector. Empirical evidence appears to show that these two variables may be a better measure of the later. Further study might specify variables other than mother's age and education, to capture the determinants of the household productivity.

References

Becker, G. (1965) A theory of the allocation of time. Economic Journal, 75: 493-517.

------ (1976) The economic approach to human behavior. Chicago, IL: The University of Chicago Press.

------ (1981) A treatise on the family. Cambridge, MA: Harvard University Press.

Bureau of the Census (1988) Current Population Survey: March 1988 tape technical documentation. Washington D.C.: The Bureau of the Census.

Cain, G. G. (1966) Married women in the labor force: An economic analysis. Chicago, IL: University of Chicago Press.

Chow, G. C. (1983) Econometrics, NY: McGraw-Hill.

Gerner, J. L. & Zick, C. D. (1983) Time allocation decisions in two-parent families. Home Economics Research Journal, 12(2), 145-158.

Gordon, H. A. & Kammeyer, K. C. (1980) Gainful employment of women with small children. Journal of Marriage and the Family, 42, 327-336.

Gramm, W. L. (1975) Household utility maximization and the working wife. The American Economic Review, 65(1), 90-100.

Gronau, R. (1973) The effect of children on the housewife's value of Time. Journal of Political Economy, 81(No.2, part II), s168-s199.

------. (1977) Leisure, home production, and work: The theory of the allocation of time revisited. Journal of Political Economy, 85(No.6), 1099-1123.

Hall, R. E. (1973) Comment: The effect of children on the houeswife's value of time. Journal of Political Economy, 81(No.2, part II), s200-s201.

Mincer, J. (1962) Labor force participation of married women. In H. G. Lewis, (Ed.), Aspects of labor economics. Universities-National Bureau Conference Series 14, Princeton, NJ: Princeton University Press.

Pindyck, R. S. & Daniel, L. R. (1981) Econometric models and economic forecasts. New York: McGraw-Hill.

Rexroat, C. (1990) Race and marital status differences in the labor force behavior of female family heads: The effect of household structure. Journal of Marriage and the Family, 52, 591-601.

Weiss, R. S. (1979) Going it alone. New York: Basic Books.

Zick, C. D. & Bryant, W. K. (1983) Alternative strategies for pricing home work time. Home Economics Research Journal, 12(2), 133-144.

Employment Status of Wife and Service Expenditures

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Data from the Bureau of Labor Statistics Consumer Expenditure Surveys were used to investigate factors influencing household expenditures for services in the United States. There were significant differences between families with full-time working wives and other families (non-working and part-time working wives). Household production variables had a significant impact on service expenditures in all instances though the magnitude of the effect varied by the wife's employment status.

Increased labor force participation by married women has been one of the major social and economic changes in the United States in the past two decades. Labor force participation rates by married women increased from 31 percent in 1960 to 57 percent in 1988 (U.S. Department of Commerce). For married women aged 25-34 with husband present these rates have increased from 28 percent in 1960 to 69 percent in 1988. The corresponding figures for women aged 35-44 are 36 percent and 73 percent respectively. Increases have also been obtained for married women with children under six. Labor force participation rates for these women have increased from 19 percent in 1960 to 57 percent in 1988 (U.S. Department of Commerce). According to some analysts the percentage of women in the labor force suggests that by 1995, over 80 percent of all mothers with children at home will be working (Bureau of National Affairs 1986).

The increase in labor force participation rates by women has led to a number of studies concerning the major strategies that might be used by working wives to reduce time pressures (Strober and Weinberg 1980, Nichols and Fox 1983). These strategies include substituting capital equipment for household labor, and substituting paid labor for household labor.

There have been several studies on the first strategy which indicated that working wife and non-working wife households did not differ in their purchase of time-saving durables. Less work has been done on the second strategy with the exception of food away from home studies. Ballante and Foster (1984) focused on the relationship between wife's employment status and expenditures on time-saving services using data from the 1972-73 BLS Consumer Expenditure Survey. The results of their analysis indicated that income, family life cycle and the number of weeks worked by the wife had a significant impact on total service expenditures. Dummy variables were used to measure the employment status of wife (full-time, part-time or non-working). The employment status was significant in the case of full-time working wives.

A later study used Logit analysis to analyze purchases of twelve home producible commodities including car repair, home repair, housecleaning, food preparation, clothing repair and day care (Weagley and Norum 1989). The sample was confined to husband-wife households where both spouses worked outside the home. The authors used a more detailed version of the household production model and their independent variables included wages and hours worked of both husband and wife, net worth, age of wife, number of young children and teenagers and health satisfaction. The authors found that wages, in particular the wife's wages, were an important determinant of expenditures for six of the twelve commodities. They also noted that local market conditions might affect the degree to which the commodities could be purchased in the marketplace and hence substituted for home producible commodities.

A third study by Dardis, Soberon-Ferrer and Tsay (1989) extended the research by Ballante and Foster but included the wages and hours worked of both husband and wife to measure the impact of household production variables on service expenditures. The analysis was confined to two-earner husband-wife families and used data from the 1984-85 Consumer Expenditures Survey. The authors found that all four work related variables had a significant impact on total service expenditures in addition to family life cycle and location.

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A final study by Jacobs, Shipp and Brown (1989) also used data from the 1984-86 Consumer Expenditures Survey to analyze expenditure patterns of working and non-working wife households. Dummy variables were used to measure the employment status of the wife with part-time defined as working "fewer than 35 hours per week or working full-time for part of the year" while full-time was defined as working "35 hours or more per week for at least 50 weeks" (p. 20). The authors found that the employment status of the wife had a significant impact on child care and food away from home expenditures once the effect of other variables such as household income, family life cycle and location were held constant.

The objectives of this research were to investigate the impact of the wife's employment status and household production variables on household expenditures for services in the United States. It builds on earlier research but differs in that it includes both working wife households (full-time and part-time) and non-working wife households and obtains an implicit value of time for non-working wives. It also investigates whether the three groups of households should be separated or combined in the analysis of service expenditure decisions.

Procedure

The household production model is discussed first followed by the dependent and independent variables. The estimation of an imputed wage for non-working wives follows. The statistical analysis and data used in the analysis are given in the last two sections.

Household Production Model

The household production model was used to identify the major explanatory variables for services expenditures (Becker 1965; Michael and Becker 1973). The model used in this study differs from that proposed by Becker in one major respect. The household decision process is treated as sequential in which household members first enter the labor force to achieve a certain income level and then make expenditure decisions in accordance with income and time constraints. Thus, hours worked by both husband and wife are treated as exogenous variables. This procedure is based on the fact that many workers face institutional constraints on hours of work and cannot change jobs readily due to imperfect mobility, or imperfect information (Killingsworth 1983, pp. 46-66, Deaton and Muellbauer 1980, p. 286; Mishan 1967, p. 115; Mishan 1977, p. 210). It could also be argued that social and economic changes in the past decades have affected the employment decisions of husbands and wives so that both are made simultaneously. The earnings of wives are treated as permanent rather than as secondary or transitory in this simultaneous decision. The characteristics of the model are as follows:

Utility Function :

$$U = u(Z_1, Z_2, \ldots, Z_n) \qquad (1)$$

Production Function :

$$Z_i = z_i(x_i, t_i, E) \qquad (2)$$

Market Goods Constraint :

$$p_i x_i = w t_w + V = Y \qquad (3)$$

Time Constraints :

$$T = t_w + t_i \qquad (4)$$

where

Z_i = commodity or activity produced in the household, $i = 1, 2 \ldots, n$

x_i = vector of market goods used in the production of Z_i

t_i = vector of time inputs used in the production of Z_i

p_i = price vector of x_i

w = wage rate vector

t_w = vector of time inputs used in market production

V = unearned income

Y = household income

T = total time available for household and market production, and

E = technology of household production.

The demand for household services based on the household production model is as follows:

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$$p_i x_i = x_i(t_w, w, V, D, L, E) \quad (5)$$

where

$p_i x_i$ = expenditures on service i

D = vector of preferences and service needs

L = location, a proxy for service costs and service availability

and the other terms are as defined earlier.

The two variables D and L are designed to hold preferences, service needs and service costs constant since these may vary across households. Their inclusion is required to achieve the "ceteris paribus" conditions when data from different households in different locations are used (Phlips 1983).

The three household production variables (t_w, w, V) are hypothesized to have a positive impact on service expenditures assuming that Z is a normal commodity or activity and that the market goods (x_i) are not inferior factors of production (Varian 1979, p. 50). Thus, an increase in these variables will increase household income, increase the demand for Z_i and encourage the substitution of x_i for t_i since the total time for household production (and leisure activities) is limited (Becker 1965, Michael and Becker 1973).

Dependent and Independent Variables

The dependent variables is household expenditures on total services which includes child care, clothing care, domestic services and food away from home. All of these categories reflect time-buying activities.

The primary independent variables of interest are the household production variables. However, a rigorous analysis of the effects of these variables on service expenditures requires that allowances be made for variations in preferences, service needs and service costs of households. These demand shifters include family life cycle, race of household head, geographic location and home ownership. The hypothesized effects of the independent variables on service expenditures are discussed in the following section.

Household Production Variables. These variables include the wage rate, time spent in market production and unearned income. Unearned income includes rental and interest income, unemployment insurance, welfare payments and food stamps, and pensions. The coefficients for the wage rate, work hours and unearned income are expected to be positive.

Family Life Cycle Variables. These variables include the age of husband, the number of children aged 0 to 2 and 3 to 5 and the number of persons in the household excluding children under six. Both age and age squared were used in order to take the curvilinear relationship between age and service expenditures into consideration (Weagley and Norum 1989, Jacobs, Shipps and Brown 1989). A positive coefficient for age and a negative coefficient for age squared would indicate a U-shaped curve with expenditures first increasing with age and then decreasing. The number of children/persons in the household is expected to increase the demand for services.

Race of Household Head. This variable is included to allow for differences in tastes and preferences. It is hypothesized that black families will spend less on total services than other families (Ballante and Foster 1984).

Location. Urbanization is the only location variable since data for regions are not provided for rural households. It is included to allow for variations in service costs (and service availability) in urban and rural areas. It is hypothesized that families living in urban areas will be more likely to substitute paid labor for household labor than families living in rural areas (Dardis, Soberon-Ferrer and Tsay, 1989).

Home Ownership. According to Garman and Forgue (1988), the cash outflow of renters is usually smaller than that of homeowners so that they may have more to spend on clothing care and food away from home than homeowners. However, home ownership had a positive impact on total service expenditures in the study by Ballante and Foster (1984). It was hypothesized that it would have a positive impact on total service expenditures.

Estimating an Imputed Wage for non-Working Wives

A two stage procedure was adopted to estimate the imputed wage for non-working wives following the work by Killingsworth (1983). In the first stage an ordered probit analysis was used to estimate the probability of working for all wives in the sample. The probit equation was as follows:

$$\Pr(\text{work}) = f(X, Z) \qquad (6)$$

where Pr (work) reflects the probability that the wife will work full-time, part-time or not at all, X is a vector of "wage variables" or human capital variables and Z is a vector of taste variables which also influence the work decision. The human capital variables were age and education of wife and work experience. Data on labor force experience were not available so that the number of children aged 0-2 and 3-5 were used as proxies for work experience. The number of children in both age groups were expected to reduce labor force participation in previous years and hence labor force experience. The Z variables were family size (excluding the number of children under six), race, home ownership, location, unearned income and husband's income.

A variable lambda (λ) which adjusts for sample selection bias, was obtained from the Probit analysis and was calculated for each individual in the sample. In the second stage a wage equation was estimated for all working wives as follows:

$$\ln(w) = g(X, \lambda) \qquad (7)$$

where w = wage rate and the other variables are as defined earlier. The imputed wage for non-working wives was then obtained from the coefficients of the X variables in the wage equation.

Statistical Analysis

Ordinary Least Squares (OLS) was used to examine the impact of explanatory variables on the demand for services since there were no zero observations on the dependent variable. The F-statistic and t-statistics were used to determine the significance of the model and the individual coefficients respectively. The Wald test was used to test the significance of sets of regressors such as household production or family life cycle variables (Green 1990).

Separate analyses were performed for families with full-time, part-time and non-working wives in order to determine if there were differences between the three groups. The hours worked by the wife were excluded in these analyses. Full-time was defined as working 35 hours a week or more. The equality between the sets of coefficients in the three groups was tested using the Wald test. The three groups of families were combined or analyzed separately in the OLS analysis depending on the results of the Wald test.

Data Used in the Analysis

Quarterly data from the 1984 and 1985 Bureau of Labor Statistics Interview Panel Consumer Expenditure Surveys (CES) were used in the analysis. A rotating panel of approximately 5,000 households is interviewed each quarter for five quarters. Two years of data were required to yield an adequate sample size for this study. The analysis was confined to husband-wife households where the husband worked. Complete data for four successive quarters were available for 1,215 households.

Results

Sample Characteristics

Annual service expenditures ranged from $1,259 for non-working wife households to $1,464 and $1,955 for part-time and full-time working wife households respectively. Sample characteristics are given in Table 1. The actual or imputed hourly wages for wives range from $4.68 for non-working wives to $8.12 for full-time working wives. The order is reversed for husbands with the highest hourly wage ($13.12) occurring for husbands with non-working wives. These households also have a higher unearned income than the other two groups of households. Other differences between the three groups of households occur with respect to age of husband and wife, the number of children aged 0-2 and 3-5, race and location. In contrast, there are small differences with respect to the number of hours worked by the husband suggesting that the wife's employment status may play a major role in the decision to substitute paid labor for household labor.

Comparison of Three Household Groups

The results of the Wald test indicated that there were no differences between households with non-working and part-time working wives. However, there were significant differences between full-time working wife households and other households. Accordingly separate regressions were run for households with full-time working wives and for other households.

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Results of the OLS Service Expenditure Analysis

The results of the OLS service expenditure analysis are given in Table 2. The F statistics indicate that the model is significant in explaining variations in the dependent variable while the adjusted R^2 ranges from 0.29 to 0.33.

The results for the household production variables are of interest in several respects. First, all five variables are significant for both groups of households though the level of significance for the wage rate of the wife is higher for full-time working wife household than for other households. Second, all five variables have a positive impact on service expenditures as hypothesized. Finally, the impact of both work variables varies by the wife's employment status as shown by a comparison of wage and work hour elasticities of demand which are given in Table 3. The wife's wage elasticity of demand for services is 0.35 for full-time working wife households compared to 0.09 for other households. The corresponding values for the wife's work hours elasticity of demand are 0.71 and 0.04. The elasticity values for husbands and wives are fairly similar in the case of full-time working wife households while there are considerable differences in the case of other households. The unearned income elasticities of demand range from 0.01 to 0.02.

The two groups of households also differ with respect to the impact of family life cycle variables. While the number of children aged 3-5 has a positive and significant impact on service expenditures in both instances, the two age variables are only significant for full-time working wife households. Service expenditures first increase with age as hypothesized and then decrease. This finding is in keeping with the greater work responsibilities of two-earner households and the need to substitute paid labor for household labor when the wife works full-time. The number of children aged 0-2 also had a significant impact on service expenditures for full-time working wife households reflecting the greater use of child care services for such households. In contrast, family size was only significant for part-time and non-working wife households.

The three remaining variables are race, location and home ownership. Black households and rural households spent less on services than other households and the coefficients were significant in all instances. Home ownership was only significant in the case of part-time, non-working wife households where its impact was positive. This result was also obtained by Ballante and Foster (1984) for all households.

The significance of two variable sets (household production and family life cycle) was also examined using the Wald test. The two variable sets were significant for both groups of households.

Discussion

One of the major findings of this analysis was that there was a significant difference between full-time working wife households and other households. Thus, a combined group analysis with dummy variables to reflect the employment status of wife would have been inappropriate since the results of the Wald test indicated that there were differences between the two household groups with respect to slopes as well as intercepts.

The results of this analysis provide strong support for the household production model and the need to consider both time and budget constraints in the service expenditure decision. All five household production variables had a positive and significant impact on service expenditures in all instances though the magnitude of the effect varied by the wife's work status. Thus, the impact of a change in wages or work hours of the wife was considerably greater for full-time working wife households than for other households. The wife's wage elasticity of demand for services was 0.35 for full-time working wife households compared to 0.09 for other households. The corresponding values for the wife's work hours elasticity of demand were 0.71 and 0.04. The fact that the elasticity values for husbands and wives were fairly similar in the case of full-time working wife households is in keeping with the greater contribution of full-time working wives to household income.

Family life cycle variables also played a role, particularly for full-time working wife households. The fact that age was only significant for these households is interesting and may reflect the greater time constraints of two-earner households over the life cycle. The set of family life cycle variables had a significant impact on service expenditures for both groups of households.

The remaining variables were included to account for differences in tastes, service needs, and service costs between households. They had a significant impact on service expenditures in five out of six instances.

In conclusion, the household production model used in this analysis provided a reasonable degree of explanation for variations in the dependent variable. The breakdown of total household income into separate components permitted a more detailed investigation of the impact of time and budget constraints on service expenditures by different groups of households. An extension of the analysis to the demand for specific service categories would provide additional information concerning the demand for services. Thus, the wife's time constraints may play a major role in the case of child care for full-time working wife households while both time and budget constraints may be of equal importance in the case of other service categories such as food away from home.

References

Becker, G. S. (1965) A theory of the allocation of time. The Economic Journal, (September), 493-517.

Bellante, Don & Foster, A. C. (1984) Working wives and expenditures on services. Journal of Consumer Research, 11, (September), 700-707.

Bureau of National Affairs, Inc. (1986) Work and family: a changing dynamic. Washington, DC: The Bureau of National Affairs, Inc.

Dardis, R., Soberon-Ferrer, H. & Tsay, Y. Y. (1989) Determinants of household expenditures for services. Proceedings of the Annual Meeting of the American Council on Consumer Interests, Baltimore, Maryland (March 29 - April 1).

Deaton, A. & Muellbauer, J. (1980) Economics and consumer behavior, Cambridge University Press.

Garman, T. & Forgue, R. (1988) Personal finance, 2nd Ed., Boston: Houghton Mifflin Company.

Green, W. (1990) Econometric Analysis, New York: MacMillan.

Jacobs, E., Shipp, S. & Brown, G. (1989) Families of working wives spending more on services and nondurables. Monthly Labor Review, 112(2), 15-23.

Killingsworth, M. K. (1983) Labor Supply, Cambridge, England: Cambridge University Press.

Michael, Robert T. & Becker, G. S. (1973) On the new theory of consumer behavior. Swedish Journal of Economics, 75, 378-396.

Mishan, E. J. (1967) The costs of economic growth, New York: Frederick A. Praeger.

Mishan, E. J. (1977) The economic growth debate, London: George Allen and Unwin.

Nickols, S. Y. & Fox, K. D. (1983) Buying time and saving time: strategies for managing household production. Journal of Consumer Research, 10 (September), 197-208.

Phlips. L. (1983) Applied Consumption Analysis, Revised Edition, Amsterdam: North-Holland Publishing Company.

Strober, M. H. & Weinberg, C. B. (1980) Strategies used by working and nonworking wives to reduce time pressures. Journal of Consumer Research, 6 (March), 338-348.

U.S. Department of Commerce. Statistical Abstract of the United States, 1988, Washington, DC: U.S. Government Printing Office, selected years.

Varian, H. R. (1978) Microeconomic Analysis, New York: W. W. Norton and Company.

Weagley, R. O. & Norum P. S. (1989) Household demand for market purchased, home producible commodities. Home Economics Research Journal, 18 (September), 6-18.

Table 1
Sample Characteristics

Variable	Name	Mean or Percentage Full-time	Part-time	Non-working
Unearned Income	UNINC	$1,175.30	$1,472.15	$2,806.42
Hourly Wage (wife)	WAGEW	$8.12	$7.43	$4.68[a]
Hours Worked (wife)	HOURW	2,139.60	1,166.84	0.00
Hourly Wage (husband)	WAGWH	$11.51	$12.45	$13.12
Hours Worked (husband)	HOURH	2,321.09	2,327.79	2,366.08
Age of Husband, Years	AGEH	39.70	41.56	43.69
No. of Children, 0-2	CHLD1	0.13	0.09	0.29
No. of Children, 3-5	CHLD2	0.14	0.22	0.26
No. of Persons excluding children under 6	FSIZE	3.04	3.45	3.25
Race of Husband[b]	BLACK	16.08	10.90	6.37
Location	RURAL	12.38	8.33	11.00
Home Ownership	OWNER	81.15	80.77	79.34
Age of Wife, Years	AGEW	37.61	38.73	41.25
Education of Wife, Years	EDUW	13.39	13.04	12.14

[a] Estimated.

[b] Race of husband and wife were identical in nearly all instances.

Table 2
Results of OLS Service Expenditures Analysis[a]

Independent Variable	Full-time Coefficient	t-ratio	Part-time/Non-working Coefficient	t-ratio
Constant	-4,273.82	4.820***	-1,727.35	3.577***
UNINC	0.03	2.355**	0.05-01	2.289**
WAGEW	85.21	2.868***	22.69	1.895*
HOURW	0.65	2.606***	0.17	2.794***
WAGEH	58.37	4.294***	60.01	7.081***
HOURH	0.54	3.723***	0.43	4.555***
AGEH	76.14	2.120**	12.54	0.625
$(AGEH)^2$	-0.94	2.247**	-0.03	0.115
CHLD1	699.94	3.595***	36.78	0.486
CHLD2	1,188.05	6.766***	167.46	2.523**
FSIZE	47.59	1.053	71.33	2.786***
BLACK (non-black)	-353.37	2.602***	-257.48	2.359**
RURAL (urban)	-257.68	2.497**	-299.64	3.843**
OWNER (renter)	211.41	1.528	143.42	2.047**
F		21.12***		22.29***
$\bar{R}^2$		0.33		0.29

***Significant at the 0.01 level.
** Significant at the 0.05 level.
* Significant at the 0.10 level.

[a] Reference group for three dummy variables are given in parentheses.

Table 3
Elasticities of Demand for Services[a]

Variable	Full-time	Part-time/Non-working
UNINC	0.02	0.01
WAGEW	0.35	0.09
HOURW	0.71	0.04
WAGEH	0.34	0.60
HOURH	0.64	0.78

[a] Elasticities are computed at the mean for respective variables.

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Locus of Control, Gap Between the Standard and Level of Living and Satisfaction with the Gap: A Path Model Replication

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The path models investigate the relationships among demographic variables, locus of control, the gap between standard and level of living, and the satisfaction with that gap. A random and economically stressed farm sample were included. The more internal control respondents experienced, the smaller was the gap. The smaller the gap, the higher was the satisfaction. Household size had a direct effect on locus of control and an indirect effect on the gap and satisfaction.

The standard and level of living are important concepts in family management theory because this theory has stipulated for a long time that one of the most important motivators to change in families is dissatisfaction due to the gap between the actual level of living and the desired standard of living (Beutler & Owen, 1980; Beutler, Owen, & Hefferan, 1988; Crawford & Beutler, 1983; Deacon & Firebaugh, 1981; Devine, 1924; Gross, Crandall, & Knoll, 1980; Hoyt, 1938; Kyrk, 1953; Liston, 1970; Paolucci, Hall, & Axinn, 1977; Rice & Tucker, 1986). However, not much attention has been paid in family management literature to the prediction of the gap between the standard and level of living or the satisfaction with the gap.

This trend has continued despite the fact that Schlater in 1970 pointed out that increased research must be conducted in the area of level of living so that further enrichment could be provided for family life. Schlater also stipulated that research on the level of living presented one of the greatest challenges. In 1973, Hafstrom and Dunsing stated that additional work was needed on the concept, level of living. At that time, the authors raised a series of questions surrounding the concept. More than a decade later, Michalos (1986) still pronounced the need for more resources to be designated toward gap theory explanations.

In addition, it is important that family management researchers investigate the relationships among locus of control, the gap between standards and levels, and satisfaction with the gap. The interaction of these concepts is crucial within a financial counseling environment. The interaction among these variables can influence a client's motivation in even small increments so as to impact the success of financial counseling efforts.

The purpose of this study is to replicate a path model that investigated the relationships among selected demographic variables, locus of control, the gap between the standard and level of living, and the satisfaction with that gap. The initial sample on which the model was tested was a random sample of farm women. A sample of farm men and women under economic stress is used in this study because it has some distinct characteristics from the initial one and if the findings of the path model are similar, there would be additional support for both the model and the hypotheses. A comparison of the findings from the two samples is done to provide further evidence to support the family management theoretical proposition mentioned earlier.

Literature Review

It is important to first clarify the distinctions between the central concepts that are the focus of the study. Davis (1945) defined level as that which is actually experienced, enjoyed, or suffered by the individual or group; the standard is the level that is urgently desired or striven for. Gratification is received with success in reaching the standard while frustration is felt if the standard is not reached.

Consumption, according to Davis (1945), is a sort of aggregate of the food, fuel, and the nondurable goods used up, the services of houses, automobiles, clothing, and other durable and semidurable goods utilized, and the services of human beings used, by an individual or group, in a given period of time. Level of living, on the other hand, is a more global measure. The level of living, according to Davis (1945), is made up of a complex combination of consumption, working conditions, possessions, freedoms, and atmosphere, and the balance or harmony among them, in relation to needs and felt wants.

The discrepancy between the standard and level of living affects the degree to which economic well-being has been perceived by individuals and families to be adequate (Deacon & Firebaugh, 1981). Families have felt poor when their incomes were insufficient or barely sufficient to provide what, by their standards, was essential (Kyrk, 1953).

The literature that addresses the standard or level of living incorporates either one or the other concept in their study. Hafstrom and Dunsing (1973) and Hefferan (1971) studied level of living. Hahn (1972) investigated both the level of living and standard of living aspirations. However, none of the studies included a measure that assesses the perceived magnitude of the *gap* between the standard and level of living which is the focus of this study.

Satisfaction is a function of, determined by, or explainable in terms of the perceived gap (discrepancy) between one thing and another. Michalos (1986) states that there are at least six different gap-theoretical explanations. The one used in this study is the goal-achievement gap theory. It states that satisfaction is a function of the perceived gap between what one actually has and what one wants to have. This gap theory, according to Michalos, may be identified by talking about the perceived gap between what a particular person has now and has as a goal.

There are various factors that might affect the relationship between the perceived magnitude in the gap between the standard and level of living and the satisfaction with the gap. Whether a person considers the discrepancy a short-term or long-term event could determine the level of satisfaction with it. Many adults who become full-time students again after several years in the labor market are often willing to accept a larger gap because they expect that gap to decrease after they complete their educational program. As a result, their satisfaction level may be higher than one might expect for the magnitude of the gap.

Another factor that might affect the relationship is the past experiences of people. If there has been a large gap between the standard and level of living for many years, a person may adjust their level of satisfaction at a point in time to alleviate some of the cognitive dissonance that the large gap has created. If the same large gap exists for two different people, a person who feels powerless to affect a change in that gap may have a lower satisfaction level with that gap than someone who has the skills, ability, or ambition to affect a change in the gap. How much experience a person has had with others who are not like themselves might also affect how a person evaluates a gap.

Both socioeconomic and socio-psychological variables have predicted satisfaction with the level of living. Homemakers who had higher incomes, were white, perceived their incomes as adequate, had husbands who were employed, had husbands who held white collar jobs, owned houses with seven or more rooms, and had not moved in the last five years were most satisfied with their level of living (Hafstrom & Dunsing, 1973; Hefferan, 1971). Hafstrom and Dunsing (1973), in addition, found high marital satisfaction to result in increased satisfaction with the level of living. Hahn (1972) discovered that a homemaker was more likely to want only material things if she was dissatisfied with her level of living.

However, no studies investigating the standard or level of living have included a variable that measures how much control the respondents felt they had over what happened to them. In the 1960s, Rotter introduced and developed the "Internal-External Locus of Control" scale as a measure of a generalized belief that rewards are due to one's own behavior as opposed to the view that they are controlled by external forces. Since then a considerable amount of research has been done on the concept (Bugaighis & Schumm, 1983; Lefcourt, 1976; Rotter, 1966).

Rotter's measure is particularly important to use in this study because of the sample, farm women. Due to what has been happening in the agricultural economy in recent years, farm families have found it more and more difficult to support themselves on the land. Increasingly both farm men and women have been deciding to take an off-farm job as an option to selling the farm (Beale, 1980; Bokemeier, Sachs, & Keith, 1983; Brown & O'Leary, 1979; Coughenous & Swanson, 1983; Jones & Rosenfeld, 1981). But we do not know how what is happening in the agricultural economy and the market decisions that are made as a result affect their locus of control or their perceived gap between the standard and level of living or the satisfaction with the gap.

An earlier study (Danes, in press) investigated the relationships among locus of control, the gap between the standard and level of living, and the satisfaction with that gap with a sample of farm women. The findings from that study indicated that the more internal control the women experienced, the smaller the gap between the standard and level of living. The smaller the gap and the higher the internal control experienced, the higher was the satisfaction with the gap. There were also indirect effects mediated through locus of control in the path model being tested.

The hypothesis for this study was that the larger the internal control experienced by the respondents, the smaller the gap between the standard and level of living and, in turn, the higher the satisfaction with the gap. The household size, off-farm employment, income level, educational level, and age of the respondents were hypothesized as variables that would affect the three dependent variables in the path model, locus of control, the gap between the standard and level of living, and the satisfaction with the gap.

The Sample

The same path model is tested on two samples in this study and then the findings are compared. The data for the initial sample (Sample 1) were collected in a Midwestern state in the Spring of 1988. The data were collected by mail questionnaire from a random sample of 513 farm women. There was a 42 percent return rate. The sample represented counties from the entire state. The data from the study were compared to U.S. and Midwest census data for farm populations. That comparison indicated that the demographic data from this study closely resembled those from the overall farm population.

The data for the sample of farm men and women under economic stress (Sample 2) were collected by mailed questionnaires in 1987 and 1988 to recently completed cases of Mandatory Farm Credit Mediation in 29 randomly selected counties of a Midwestern state. The sampling unit was a mediation case and each case had the potential of generating two respondents when there was an intact marriage. Respondents included 592 persons representing 329 mediation cases.

The Variables

Dependent Variables

A locus of control index was created from eight questions that asked about the degree of control the respondents felt over various aspects of their lives. Seven of the questions for the index used for this study came from work done by Bugaighis and Schumm (1983) and Edwards and Booth (1976). An eighth question on control over finances was added to provide an additional dimension to the locus of control index.

The answers to each question ranged from strongly disagree to strongly agree on a five-point scale. The mean of the index for Sample 1 was 25; the alpha reliability of the index was .622. The mean of the index for Sample 2 was 22 and the alpha reliability of the index was .659. The higher the score of the index, the more internal control the respondents felt over their lives. It is logical that a sample under economic stress would have a lower mean on the locus of control index as compared to a random sample.

The gap between the standard and level of living was based upon Cantrils' (1965) self-anchoring striving scale. The respondent first read a statement that expressed that there sometimes is a gap between the current situation and what we would like the situation to be. Then, the respondent was asked to suppose 10 represented the very best situation she could think of for herself and 1 represented the very worst situation she could think of for herself. The respondents were given a brief definition of level of living. It was defined as what you consume as well as your working conditions, possessions, sense of well being and the balance between these things (Davis, 1945). These anchoring points represented what was desired.

Using this self-defined continuum, the respondent was then asked to circle the number that best reflected where she would put herself. This number represented the actual assessment by the respondent of her current level of living compared to what she considered to be the best situation for herself or the gap between her standard and level of living.

To further explain the scale, if 10 represented the best situation for the respondent and the respondent circled a 9, there would be a small gap between the standard and level of living. If the respondent circled a 2, there would be a large gap between the standard and level of living. If the variable remained coded as it was thus presented to the respondent, a large number code would indicate a small gap. So that the coding of the variable reflected the conceptual nature of the variable and so that the coding reflected the logical thinking of most people in that a large code equated to a large gap and vice versa, the variable was recoded so that a 1 now represents a small gap between the standard and level of living and a 10 represents a large gap. The range of the variable was from 1 to 10. The mean was 4 for Sample 1 and 4.5 for Sample 2.

The satisfaction with the gap between the standard and level of living was based on a seven-point scale from extremely dissatisfied (1) to extremely satisfied (7). Level of living was again defined for the respondents as described in the gap question. The mean was 5 for Sample 1 and 4 for Sample 2. The seven-point scale of the satisfaction question meets the suggestion of Hafstrom and Dunsing (1973) that satisfaction with level of living questions have a finer breakdown of "satisfied" categories than was used in their study.

Independent Variables

The education variable was the number of years of school completed. The range was from 2 years to 19 years in Sample 1 and 2 to 21 years in Sample 2; the average respondent completed high school in both samples. The average age was 46 years in Sample 1 and 49 in Sample 2. The number of years married was part of an earlier model but it was dropped from the analytical model because of a high correlation with age. The average household size was 3.6 and the range was one to ten for Sample 1. For Sample 2, the average household size was 3.5 and the range was from one to nine.

Income was the adjusted gross income of the household; it was a continuous variable. The range of the income variable was -$92,722 to $325,000 for Sample 1 and the income range for Sample 2 was $-306,128 to $421,207. Since the income variable was adjusted gross income, that figure included the farm income plus any off-farm income that there may have been. The natural log transformation of income was utilized in this study in order to satisfy one of the assumptions of regression and that is that there be homogeneity of variances.

The off-farm job variable is a dummy variable where "0" represents those respondents who were not employed off the farm and "1" represents those who were employed off the farm. Fifty-four percent of the respondents were not employed off the farm and 46 percent of them were employed off the farm for Sample 1. Forty-four percent were not employed off the farm for Sample 2 and 56 percent were employed off the farm.

The Analysis

Preliminary analyses for the study included frequencies, cross-tabulations, and correlations. The path analysis included three regression equations. In one, the

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locus of control was the dependent variable. In another, the gap between the standard and level of living was the dependent variable. In the third equation, the satisfaction with the gap between the standard and level of living was the dependent variable. The regression analysis included those equations to determine the indirect effects among the variables as well as the direct effects.

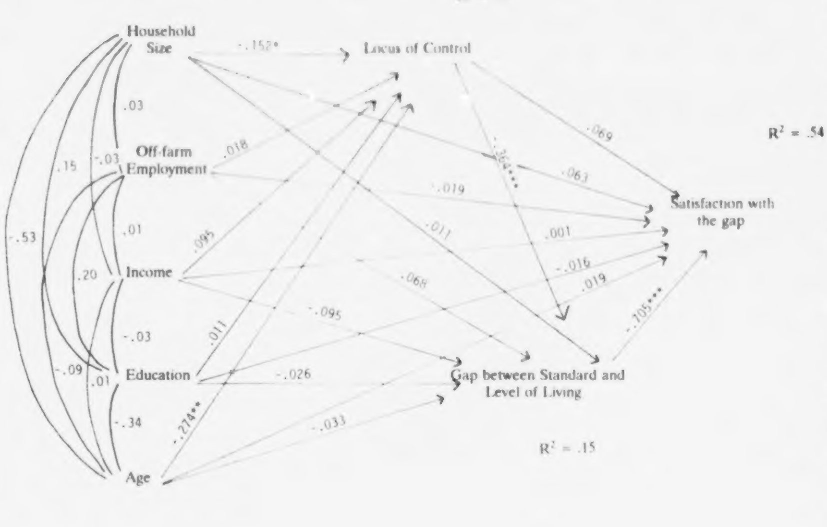
A residual analysis was completed to check that the error terms were normally distributed and to check for outliers. For each of the equations, the error terms were normally distributed and there were no outliers. Pedhazer's (1982) rule of thumb was used in this residual analysis which was to consider standardized residuals greater than two as extreme.

Results

Path Analysis

The fully recursive path model is described. Figure 1 includes the standardized betas for the path model from Sample 1 and Figure 2 includes the ones for the path model from Sample 2. Since a detailed discussion for Sample 1 can be read in another source (Danes, in press), what will be emphasized in this study are the results of the path analysis from Sample 2 and the comparison of the findings from Sample 1 and Sample 2.

Figure 2. Path Analysis Diagram for Economically Stressed Men and Women Sample



* p<.05, ** p<.01, *** p<.001

Two variables, household size and age, were statistically significant in predicting locus of control for a sample of farm men and women under economic stress (Figure 2). The higher the number of members in the household, the more the respondent felt their life was controlled by external forces. The older the respondent, the more the respondent felt their life was controlled by external forces. The R^2 for the equation was .066, which meant that approximately seven percent of the variance in locus of control was explained by household size and age. The F-score for the model was 4.03 (p<.01).

The second regression equation in the path model was the regression analysis of the gap between the standard and level of living on household size, off-farm employment, income, education, age, and locus of control. Approximately 15 percent of the variance of the gap between the standard and level of living was explained by these variables. Locus of control was statistically significant at the .001 level and was the only variable that was statistically significant predictor of the gap between the standard and level of living. The more internal control the respondent felt over their life, the smaller the gap between the standard and level of living. The F-score for the equation was 8.28 (p<.001).

Approximately 54 percent of the variance in the satisfaction with the gap between the standard and level of living was explained by the variables in the model. The only statistically significant predictor of the satisfaction with the gap was the explicit measure of the gap. The smaller the gap between the standard and level of living, the higher was the satisfaction with the gap. The F-score for the equation was 46.86 (p<.001).

Indirect Effects

Figure 2 indicates only the direct effects in the path analysis for Sample 2. Path analysis allows an investigation of indirect effects as well. Only those variables having indirect effects higher or equal to .05 with rounding will be discussed here. Household size had a total effect of .082 on the gap between the standard and level of living. It had a direct effect of .011. It also had an indirect effect of .071 on the gap between the standard and level of living through locus of control. The more persons in the household, the greater was the gap between the standard and level of living. There also was an indirect effect of age (.103) on the gap between the standard and level of living through locus of control. The older respondents experienced a larger gap between the standard and level of living.

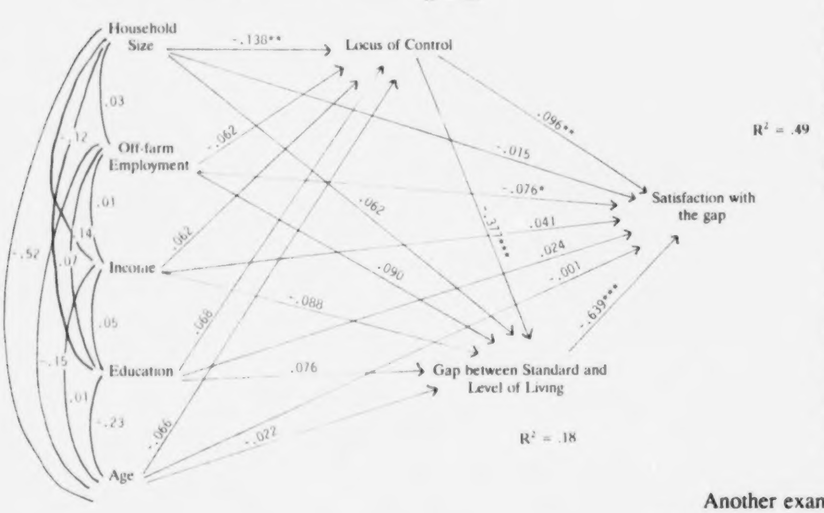
Household size had an indirect effect of -.053 on satisfaction with the gap between the standard and level of living. The higher the household size the lower the level of satisfaction with the gap. There was also an indirect effect of age (-.087) on satisfaction; the older respondents were less satisfied with the gap.

There were indirect effects of off-farm employment (-.049), income (.067), and locus of control (.257) on satisfaction with the gap through the explicit gap between the standard and level of living. Those respondents who worked off the farm were less satisfied with the gap. Those respondents with higher incomes had higher levels of satisfaction with the gap between the standard and level of living. The respondents who experienced more internal control also experienced higher levels of satisfaction with the gap between the standard and level of living.

Comparison of the Two Samples

The path model was tested first with a random sample of farm women (Sample 1). Then it was tested with a sample of both farm men and women who were under economic stress (Sample 2). In regard to the hypothesized direct effects, the findings were consistent in direction and magnitude for both samples (Figure 1 and 2). The more internal control the respondents experienced the smaller the gap they experienced between their standard and level of living and the smaller the gap, the higher was the satisfaction level.

Figure 1. Path Analysis Diagram for Initial Sample of Women



* p<.05, ** p<.01, *** p<.001

There were some other direct effects that differed between the two samples. Age was a significant predictor of locus of control in Sample 2 but not in Sample 1. Locus of control and the employment off the farm were significant predictors of satisfaction with the gap between the standard and level of living in Sample 1 but not in Sample 2.

The majority of the significant indirect effects of the path model were similar in direction and magnitude. However, there were a few differences in the comparison of the indirect effects between the two samples. Age had a significant indirect effect on the gap through locus of control in Sample 2 but not Sample 1. Age also had an indirect effect on the satisfaction with the gap through locus of control in Sample 2 but not in Sample 1. Education had an indirect effect on satisfaction with the gap through the explicit measure of the gap in Sample 1 but not in Sample 2. Those respondents who had higher levels of education were less satisfied with the gap in Sample 1.

Discussion and Conclusions

The purpose of the study was to replicate a path model that investigated the relationships among selected demographic variables, locus of control, the gap between the standard and level of living, and the satisfaction with the gap. Two points are clear from the comparison of the analyses from the two samples. The hypothesized direct effects between the dependent variables were consistent in direction and magnitude for both samples. The second point that becomes clear from the analysis is that it is crucial to investigate the indirect effects as well as the direct effects in the path analysis.

There were few statistically significant direct relationships between the various demographic variables and the dependent variables within the path analysis. However, there were quite a few indirect effects of the demographic variables through various dependent various to others in the model.

For instance, household size had a significant direct effect on locus of control for both samples but not on the gap between the standard and level of living nor satisfaction with the gap. But, there were indirect effects of household size upon the gap through locus of control and on satisfaction with the gap through locus of control.

Another example of why it is important to analyze the indirect effects as well as the direct effects is that by viewing Figure 1 and 2, it appears as if of the demographic variables only off-farm employment in Sample 1 and none in Sample 2 have a direct effect upon satisfaction with the gap. When analyzing the indirect effect in Table 1 and 2, however, off-farm employment, income, and education have a significant indirect effect on satisfaction with the gap in Sample 1 and off-farm employment and income have a significant indirect effect on satisfaction with the gap in Sample 2.

A big difference between the path analyses from the two samples was the affect of age within the analysis from Sample 2, the one including both farm men and women and the sample that was experiencing economic stress. There was a direct negative effect of age upon locus of control. Those who were older experienced more control from external forces in their lives. The respondents had all completed Mandatory Farm Credit Mediation and the older ones felt that they had less internal control because there is less time and other resources to recover from this experience. There were indirect effects of age on the explicit measure of the gap and satisfaction with the gap. Those respondents who were older perceived a larger gap between their standard and level of living and a lower level of satisfaction with the gap.

The locus of control measure in these studies was an influential variable because it not only had direct but indirect effects on the gap between the standard and level of living and the satisfaction with the gap. For those professionals doing financial management education or counseling, it is important to do things early in the process that provide internal control to the students or clients. For example, teaching them a *simple* method of keeping track of family income and expenses as they occur on a calendar allows the family to discuss alternatives based on their stated goals. It empowers families to make some decisions such as which bills to pay, what proportion of a bill to pay, or it provides concrete information with which to negotiate with creditors.

Some people do not know where they spend their money. Nor, as a result, can they think ahead to what might be coming in the near future for which they might need money. Having families keep track of the income/outgo on a calendar, provides them with more internal control, which in turn, begins to reduce their assessment of the gap between the standard and level of living somewhat, which increases their satisfaction with the gap. So even though their financial status may have been affected only slightly in the short run, their sense of internal control has increased, which is a stimulus to continue to keep track of the income/outgo flow. In reality, the process of increasing the level of internal control which, in turn, affects the assessment of the gap and satisfaction with the gap is a circular one rather than a linear one.

It is also important to teach families the income/outgo flow process and then let them do it themselves rather than having them bring in the bills and the financial educator/counselor doing so. Allowing them to do it empowers them with a greater degree of internal control. Helping them get the entire family involved in the process helps the whole family "own" the process. Once the family has kept track of the income/outgo flow for at least a month or two (instilling higher levels of internal control), then the financial educator/counselor can help the family compare their goals with the income/outgo patterns and investigate ways to decrease the discrepancy between expenditure patterns and previously identified goals. By this time, the levels of internal control may have increased enough so as to stimulate motivation to begin to take action to change behavior.

The data from the study have implications for theory and research. Past literature has not included a measure of the gap between the standard and level of living but rather only one or the other of the concepts. However, family management theory has long stipulated that one of the most important motivators to change in families is dissatisfaction due to the gap between the actual level of living and the desired standard of living. Because both samples have incorporated measures of both the gap between the standard and level of living and the satisfaction with the gap and because the relationships between the variables were statistically significant, some evidence has been provided that supports that theoretical proposition.

An internal-external locus of control measure is also vital in models investigating the family level of living. There were statistically significant *direct* effects of locus of control on both the gap between the standard and level of living and the satisfaction with the gap. However, there were many *indirect* effects that were mediated through the locus of control, as well. Locus of control is an important concept to include in models like the one in this study because the interaction among these variables can influence a persons motivation to change in even small increments that might impact the success of an educational or counseling effort to affect change.

This study contributes to the literature on level of living as Schlater (1970), Hafstrom and Dunsing (1973), and Michalos (1986) stated was needed. The model needs to be tested with other than farm family samples to analyze whether similar effects are found. Further study also needs to be accomplished where the effect of the gap between the standard and level of living and the satisfaction with that gap on the motivation for change in families is determined. Doing so would contribute to family management theory as well as to the literature on the family level of living.

References

Beale, C. (1980). The changing nature of rural employment. In D.L. Brown & J.M. Wardwell (Eds.), *New directions in urban-rural migration: The population turnaround in rural America* (pp. 37-49). New York: Academic Press.

Beutler, I. & Owen, A. (1980). A home productivity model. *Home Economics Research Journal*, *9*, 16-26.

Beutler, I.F., Owen, A.J., & Hefferan, C. (1988). The boundary question in household production: A systems model approach. *Home Economics Research Journal*, *16*, 267-278.

Bokemeier, J.L., Sachs, C., & Keith, V. (1983). Labor force participation of metropolitan, nonmetropolitan, and farm women: A comparative study. *Rural Sociology*, *48*(4), 515-539.

Brown, D., & O'Leary, J.M. (1979). *Labor force activity of women in metropolitan and nonmetropolitan America* (Rural Development Research Report 15). Washington, DC: USDA, Economics, Statistics, and Cooperative Service.

Bugaighis, M.A. & Schumm, W.R. (1983). Alternative measures of perceived locus of control. Psychological Reports, 52, 819-823.

Cantril, H. (1965). The pattern of human concerns. New Brunswick: Rutgers University Press.

Coughenour, C.M., & Swanson, L. (1983). Work statuses and occupations of men and women in farm families and the structure of farms. Rural Sociology, 48(1), 23-43.

Crawford, C.E. & Beutler, I.F. (1983). Perceptions and misperceptions in consumer resource management. Journal of Consumer Studies and Home Economics, 7, 45-58.

Danes, S.M. (In press). Locus of control, gap between the standard and level of living, and satisfaction with the gap: A path model. Home Economics Research Journal.

Davis, J. S. (1945). Standards and content of living. The American Economic Review, 35, 1-15.

Deacon, R. & Firebaugh, F. (1981). Family resource management: Principles and applications. Boston: Allyn and Bacon.

Devine, E.T. (1924). The normal life. New York: Macmillan & Co.

Edwards, J.N., & Booth, A. (1976). Sexual behavior in and out of marriage: An assessment of correlates. Journal of Marriage and the Family, 38, 73-81.

Gross, I., Crandall, E., & Knoll, M. (1980). Management for modern families. (4th ed.). Englewood Cliffs, NJ: Prentice Hall.

Hafstrom, J. & Dunsing, M.M. (1973). Level of living: Factors influencing the homemaker's satisfaction. Home Economics Research Journal, 2, 119-132.

Hahn, V.A. (1972). Standards of living aspirations of 564 urban homemakers. Unpublished master's thesis, University of Illinois.

Hefferan, C. (1971). Expectation of change and satisfaction with present standard of living of urban homemakers. Unpublished master's thesis, University of Illinois.

Hoyt, E. (1938). Consumption in our society. New York: McGraw-Hill.

Jones, C., & Rosenfeld, R.A. (1981). American farm women: Findings from a national survey (Report No. 130). Chicago: National Opinion Research Center.

Kyrk, H. (1953). The family in the American economy. Chicago: University of Chicago Press.

Lefcourt, H.M. (1976). Locus of control: Current trends in theory and research. New York: John Wiley & Sons.

Liston, M. (1970). Evaluation of present methods for determining assistance grants for ADC and OAA recipients in Iowa. Report No. 101. Ames: Iowa State University, Home Economics Research Institute.

Michalos, A.C. (1986). Job satisfaction, marital satisfaction, and quality of life: A review and a preview. In F.M. Andrews (Ed.), Research on the quality of life (pp. 57-82). Ann Arbor, MI: University of Michigan, Survey Research Center, Institute for Social Research.

Pedhaser, E.J. (1982). Multiple regression in behavioral research: Explanation and Prediction (2nd ed.). New York: Holt, Rinehart and Winston.

Paolucci, B., Hall, O., & Axinn, N. (1977). Family decision making: An ecosystem approach. New York: Wiley & Sons.

Rice, A. & Tucker, S. (1986). Family life management. New York: Macmillan.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80 (Whole No. 609).

Schlater, J.D. (1970). National goals and guidelines for research in home economics. East Lansing: Michigan State University.

The Illinois Child Support Guidelines Project

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The Illinois Department of Public Aid requested a study of the guidelines used by the various states and of the costs of raising children to provide information for proposed revision of the state's child support guidelines pursuant to the provisions of the Family Support Act of 1988. We prepared a report which contained discussions of the guidelines models, various treatments of key factors, such as income, child care, etc., and a review of the costs of raising children literature and its relationship to determining appropriate percentages of income for child support guidelines. We then made our recommendations in these areas.

Costs of Raising Children

Costs of raising children studies provide important information for setting child support guidelines because they tell us how income is distributed within the family between the adults and the children. This information must be converted into a percentage of income for the purpose of setting guidelines, which may not always be straightforward.

Among the major studies of child costs examined were those of Espenshade (1984), Olson (1983), Turchi (1983), Lazear and Michael (1988), the new USDA study (Lino, 1990), and one conducted for HHS. Our major findings included: (1) costs of raising children estimates vary widely, from roughly 16-33 percent of income for one child; (2) those based upon the Engel method give the highest estimates and those based upon the Rothbarth method give the lowest estimates; (3) most states' guidelines percentages presently fall below the highest estimates based upon the Rothbarth methodology.

Major Issues

The two major issues concerning the state involved the level of the award and the type of model to be used. Compared to awards in other states and based on research of the costs of raising children and on studies examining economic well-being of families before and after divorce, we found that awards are on the low side.

Currently, awards are based on a flat percentage of the noncustodial parent's income, often referred to as the percent of income model. Many states are adopting the income shares model, where the total income of both parents is used in calculating the award which, in turn, is prorated between the parents based upon their relative, or prorated, income shares.

The advantages of keeping the percent of income model are: simplicity in calculating, administering, and updating awards; predictability for the parties involved; and possibly better acknowledgment of nonmonetary contributions of the custodial parent.

The advantages of changing to an income shares model are: accountability for both parents' income in relation to relative shares of income; more equitable treatment of families with different husband-wife income combinations; symbolic value which reduces the resistance to pay by noncustodial parents; and greater flexibility in treating key variables.

Other related issues are: Should the award be a constant or varying percentage of income? What definition of income should be used? How are key variables, for example, support obligations for other dependents, treated?

References

Espenshade, T. (1984). Investing in children: New estimates of parental expenditure. Washington, DC: The Urban Institute.

Lazear, E. P. & Michael, R. T. (1988). Allocation of income within the household. Chicago: University of Chicago Press.

Lino, M. (1990). Expenditures on a child by husband-wife families. Family Economics Review, 3(3), 2-18.

Olson, L. (1983). Costs of raising children. Lexington, MA: Lexington/D. C. Heath.

Turchi, B. A. (1983, June). Estimating the cost of children in the United States. Final report to the National Institute of Child Health and Human Development under Contract No. NO1-HD-92824, Carolina Population Center of the University of North Carolina.

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An Evaluation of the Relationship Between the Percentage-Of-Income Standard and Family Expenditures for Children

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Since July 1, 1987, family court judges in Wisconsin have been required to follow guidelines in establishing child support awards. These guidelines, known as the percentage-of-income standard, establish the portion of gross income that noncustodial parents should pay for child support: 17 percent for one child; 25 percent for two; and 29, 31, and 34 percent for three, four, or five or more children.

Federal law requires all states to have child support guidelines which are presumptive, meaning that a judge may deviate from the guidelines only for specified reasons and only with written justification. Some states base their guidelines on child-rearing costs, without reference to the income of the noncustodial parent. Wisconsin is one of 23 states that base child support awards on a percentage-of-income standard. Thirteen of these, including Wisconsin, use a "flat" percentage standard, meaning that the proportion of income to be paid in child support does not decline as income rises.

Several questions have been raised about the equity of the Wisconsin percentage-of-income standard. First, do the guidelines require noncustodial parents to spend a greater portion of their income on their children than do parents who live with their children? Second, do upper-middle-income noncustodial parents bear an unfair burden because parents in intact families tend to spend decreasing proportions of their income on their children as their incomes increase? And is this effect exacerbated by the fact that the percentage-of-income standard uses gross(i.e., pretax) income, and the overall tax system is progressive?

Data for the Study

The analysis of these questions used a merged file of the Consumer Expenditure Survey (CEX) of the U.S. Bureau of Labor Statistics for the years 1982-83 and 1984. This survey collected data on major items of expense, including taxes, as well as on demographics, income by source, employment of household members, and changes in household assets and liabilities. The U.S. Census Bureau determined how the sample families were chosen, so that the outcome would be representative of the urban U.S. civilian population. The specific sample used in this study contained families from the Midwest--Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin, and was restricted to married couples.

Method

A commonly employed technique--though one with its share of critics--was used to estimate the cost of child rearing. It was assumed that equally well-off families spend the same percentage of their income for food. Therefore the cost of a child can be calculated as the amount that a family's income must be increased to keep the percentage spent on food the same, after a child is added to the family, as it was when the family was childless. The child-rearing costs are then compared for lower- and upper-middle-income groups. Lower-middle-income families are defined as those with yearly incomes below $29,000, the median for the sample. Families with incomes below the poverty line are excluded. Upper-middle-income families are those with incomes of more than $29,000. The study also examined how specific expenditures are influenced by changes in income and family size.

Results

The most striking result of this study was that intact families spend more on child rearing than the percentages required from noncustodial parents by the Wisconsin standards. Upper-middle-income families in which the mother is a full-time homemaker spend 21 percent of their income on a single child (compared to 17 percent in the standard); they spend 30 percent for two children (compared to 25) and 35 percent for three children (compared to 29). Lower-middle-income families spend even more; 25 percent of income for one child, 40 percent for two, and 45 percent for three. These data show that lower-middle-income families do, in fact, spend a larger percentage of their gross income on child rearing than do their upper-middle-income payers, because the standard requires them to pay less than they would have paid prior to divorce.

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[1] Associate Professor, Consumer Science.

To examine the question of whether the standard might better be applied to net rather than gross income, average tax rates were analyzed. The percentage standard has been criticized on the grounds that it unfairly penalized higher-income payers because it is applied to gross rather than net income. According to this line of reasoning, in a progressive taxation system, higher-income families would pay a higher percentage of their income in taxes, leaving them with proportionately less to spend on children and other consumption. These critics of the standard argue that the percentage of income owed for a child support obligation should either be applied to net income or, if applied to gross income, be reduced for higher-income payers, to adjust for the decrease in disposable income that results from progressive taxation.

No significant differences were found between lower- and upper-middle-income families in terms of the average percentage of taxes paid. Although if the mother was employed full-time the year round in the paid labor force, lower-middle-income families reported slightly lower average tax rates than their upper-middle-income counterparts, no similar trend emerged when the mother was a full-time homemaker. Furthermore, the only taxes examined were income taxes (federal, state, and local) and property taxes. Excluded were the next largest (and most regressive) taxes: the sales tax and social security contributions. It is very likely that if one takes into account both these regressive taxes and federal tax reform--which reduced the maximum marginal tax brackets--lower-middle-income families will be found to be facing higher average tax rates than upper-middle-income families. Therefore, one can conclude that criticisms of the standard because it is applied to gross income are unfounded.

Conclusion

On average, upper-middle-income parents spend a smaller percentage of their gross income on their children than their lower-middle-income counterparts. This does not mean, however, that the Wisconsin percentage-of-income standard is punitive to upper-middle-income noncustodial parents. Although upper-middle-income noncustodial parents pay a larger share of their child's rearing costs than do lower-middle-income noncustodial parents, they still pay less than their share would have been before divorce. Neither group is required to pay as much of their income in child support as would have been allocated to the child had the family remained intact. The use of gross income rather than net income in the standard is not found to be an unfair burden on upper-middle-income noncustodial parents.

The Development and Implementation of State Child Support Guidelines: Progress and Issues in Ohio

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To examine adequacy of support, guideline amounts for two household income levels are compared with USDA estimates for cost of raising a child.

Ohio child support guidelines are based on an income shares model (Child support guidelines, 1988). The premise of this model is that a child should receive the same proportion of parental income that he or she would have received if the parents lived together.

Combined gross income is used as the basis for determining amount. Amounts paid for health insurance for child(ren) and previous child support obligation are subtracted from the payer's income. The non-custodial parent's share of child support is proportionate to his/her contribution to total income. For example, if the combined gross income is $60,000, and the non-custodial parent's income is $40,000 (less $400 for insurance), the non-custodial share of child support is 66% of the Ohio guideline amount for $60,000.

Guidelines provide dollar amounts for incomes greater than $500 per month and less than $10,000 per month. Cases outside those limits are decided on a case-by-case basis. Support orders are mandatory absent total inability to pay.

Effects of Guidelines

Adoption of guidelines has not changed the probability of the court's ordering support, but fairness and predictability of child support amounts increased (Stafford, Jackson, & Seiling, 1990). This assessment is made due to increased average amount, increased correlation between income and amount, and decreased differences in amount by gender of payer. Per capita weekly child support (in constant dollars) increased 21% since adoption of the guidelines.

Children of parents with incomes at extremes of the income range seem to have benefitted the most from adoption of the guidelines. The minimum award as well as the spread of the distribution have increased.

Implications for Family Budgets

To check for adequacy of child support, guideline amounts were compared with USDA estimates of costs to raise a child. Two case studies were used. The first case was a household with combined gross income of $62,000 and two children ages 10 and 7 (Seiling & Jackson, 1990). The husband's income was $40,000, less $600 for health insurance. His share of child support was 64%, or $8765 annually.

The husband's share of the USDA estimate for this case is $7144. Thus, the husband pays more than the USDA estimates in year 1. Child support falls below USDA estimates after three years, however, if inflation is considered (assume 7.4%--the average rate for the period 1977-1987). After 11 years, the husband underpays an average of $1335 per year.

The second case is a one-child family with combined income of $22,000, and $14,000 husband's income (Seiling, Jackson, & Stafford, 1990). The guidelines provide a support level of $3564. The husband's share of that amount is $2267, whereas the husband's share of the USDA estimate is $2593. The shortfall, $326 in year 1, increases over time with inflation. Further, the mother is likely to fall below the poverty level if child support payments are not regular and on time.

Issues raised by these findings include definitions of adequacy and need for adjustments in support to account for inflation and increased costs of older children.

References

Child support guidelines. (1988). Rules of Superintendence for Courts of Common Pleas. C P Sup R 75.

Seiling, S.B., & Jackson, G. (1990). Children of divorce: Financial planning issues for custodial parents. Financial Counseling and Planning, 1, 113-132.

Seiling, S.B., Jackson, G., & Stafford, K. (1990). Child support guidelines: What effect on women and children? Family Perspective, 24 (4), 357-382.

Stafford, K. Jackson, G., & Seiling, S. (1990). The effects of child support guidelines: An analysis of the evidence in court records. Lifestyles: Family and Economic Issues, 11(4), 361-381.

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Iowa Child Support Guidelines: Progress and Issues

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New Guidelines

New child support guidelines were adopted by the Iowa Supreme Court, effective December 31, 1990. The guidelines are based on the income-shares model. The award is calculated as a percentage of the noncustodial parent's net income. The percentage declines as the net income of the custodial parent increases. Net income is defined as gross income less deductions for federal and state income taxes; social security; mandatory pension; union dues; dependent health insurance; actual medical, child and spousal support paid pursuant to court order; unreimbursed medical expenses not to exceed $25 a month; and actual child care expenses of the employed custodial parent, less any tax credit. In addition to a child support award, the court will order medical support which is not to be included in the monetary amount of child support.

Comparing the Iowa Guidelines

Table 1 compares the new Iowa guidelines to several standards. Examples of awards are based on the Iowa guidelines at various levels of net income of the parents, for a custodial family with two children. Three different assumptions are made about the custodial parent's net income: it equals zero, it equals one-half of the noncustodial parent's income (approximately the national average), and it equals the noncustodial parent's income.

A comparison is made between the total expenditures for child-rearing that are implicit in the Iowa calculations and recently published USDA figures of actual expenditures on children residing in husband-wife families. At the very lowest custodial parent income levels, AFDC eligibility would increase actual income and thus the estimate of total expenditures is unrealistically low. At moderate and upper income levels there is a general correspondence between the Iowa assumed total expenditures and the USDA figures. Because the published USDA figures are calculated as means within broad ranges of gross family income, the USDA figures at the lowest income categories are likely to be high and at the highest income categories in our table are likely to be low.

A comparison with Wisconsin's guidelines, which are based solely on the noncustodial parent's income, shows close correspondence between the Iowa and Wisconsin guidelines when the custodial parent's income is zero.

Issues

New presumptive guidelines for monetary and medical support raise many emerging questions. What will be the impact of the medical support requirement? If noncustodial parents meet this requirement via additional expenditures that reduce their net income and, in turn, reduces monetary support--will children be better off? Some cost shifting of health care costs for children from the Title XIX Program to private carriers is expected. Will these children receive comparable care? How will this influence the custodial parent's control over health care for her child/ren?

Will increased award guidelines result in increased child support payments to Iowa children? If yes, how will this affect divorced mothers and their children? If not, why not? What role might the process of calculating net income play in manipulating the ultimate child support award?

The research agenda for family economists and policy analysts resulting from this important policy reform is just beginning to take shape.

Table 1. Iowa Child Support Guidelines and Comparisons, 2 children

Custodial Parent's Net Monthly Income	Noncustodial Parent's Net Monthly Income $1,000	$2,000	$3,000
Zero			
Iowa Awards %	37.1%	37.2%	37.2%
$	$371	$744	$1116
Assumed Total Expend.[1]	$371	$744	$1116
USDA Expenditures[2]			
(2, 4)	$713	$713	$1014
(8, 10)	$720	$720	$1018
(14, 16)	$850	$850	$1164
One-Half Noncustodial Parent Income			
Iowa Awards %	34.3%	30.7%	30.0%
$	$343	$614	$900
Assumed Total Expend.	$515	$921	$1350
USDA Expenditures			
(2, 4)	$713	$1014	$1445
(8, 10)	$720	$1018	$1439
(14, 16)	$850	$1164	$1608
Equal to Noncustodial Parent Income			
Iowa Awards %	31.7%	30.0%	30.0%
$	$317	$600	$900
Assumed Total Expend.	$634	$1200	$1800
USDA Expenditures			
(2, 4)	$713	$1014	$1445
(8, 10)	$720	$1018	$1439
(14, 16)	$850	$1164	$1608
Wisconsin Awards[3]	$375	$750	$1125

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[1] Assumes custodial parent's expenditures on the children are proportional to net incomes.

[2] *Expenditures on a child by husband-wife families: 1990.* USDA. January 1991. Figures are total expenditures minus health care for two children ages 2 & 4, 8 & 10, or 14 & 16 years.

[3] Assumes Iowa noncustodial parent's net income is two-thirds of gross income (Wisconsin guide is 25% of gross income for 2 children).

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Rhode Island Consumers' Seafood Consumption
and Perceptions of Seafood Quality

Joan Gray Anderson, University of Rhode Island[1]
Michael T. Morrissey, Oregon State University[2]

A random sample of 256 Rhode Island consumers was surveyed in the summer of 1990 to determine their seafood consumption patterns and their attitudes about seafood quality and safety issues. Preliminary results are presented.

Introduction

In the late 1980's, issues of seafood quality and safety received a great amount of media attention but little research has been done regarding consumers' perceptions of quality and safety. A joint research project incorporating food science and consumer economics disciplines was designed and funded by Rhode Island Sea Grant. In addition, a small grant was received from the Narragansett Bay Project (NBP) to help them identify the kinds and amounts of seafood eaten by Rhode Island consumers which comes from Narragansett Bay. In their eforts at risk assessment, NBP researchers realized that the one component of missing data for their work is what seafood consumers eat which comes from the Bay. In Rhode Island, many consumers live near the ocean or Bay and have easy access to seafood. Many residents fish themselves either recreationally or for a living or know someone who does. Those who do not live on the coast are within an hour's drive; many vacation in coastal areas. Understanding the seafood consumption patterns of these coastal consumers in addtion to their perceptions of seafood quality and safety was the purpose of this research.

Methodology

In the summer of 1990, a telephone survey of Rhode Island households was conducted. A sample of 256 was obtained which is believed to be representative of the Rhode Island population. However, it should be noted for the reasons explained above, areas may not be valid. The researchers believe that this sample is probably more knowledgeable about and experienced with seafood than the average American. Despite this limitation, the high level of knowledge and experience of this sample likely yeilded more useful data than may have been uncovered from a less informed sample. The respondents surveyed had much to say about seafood and seemed to enjoy talking about it.

The survey was six pages long. Depending on how much seafood a respondent consumes, it took between fifteen minutes and two hours to complete one interview. The survey included the questions regarding specific species consumed, amount, where consumed, as well as preparation, portions consumed, differences in preferences within the family, consumption of selected (high risk) portions such as skin, fatty portions, dark portions of the flesh, liver/organs, and roe. Hypothetical questions were posed to elicit consumer response to changes in seafood consumption which might result from changes in the marketplace (price, opening of a vendor of fresh seafood in the neighborhood, more information regarding seafood selection and preparation), regulatory policy (e.g. mandatory seafood inspection, seafood labeled with catch date) and environmental factors (closure of areas of the Bay, oil spill in the Bay). Questions were also asked regarding how consumers define and assess quality. Consumer perceptions regarding the overall safety of seafood were collected. Open-ended answers were obtained regarding consumers' main safety concerns. Demographic data was also gathered. Selected highlights of the initial analysis will be presented in this paper.

Results

Seafood Consumption

Of the 256 respondents, 86 percent (235) eat seafood. The most common reason given for not eating seafood is dislike (n=12). Five respondents said they do not eat seafood because they feel it is unsafe. Of the 235 respondents who do eat seafood, about 55 percent rated it as their most favorite food. Another 25 percent rated it quite highly. Yet, most respondents, 62 percent, feel that their knowledge level of seafood is about average. In an effort to ascertain what seafood R.I. consumers eat four specific questions about each of 13 species of finfish and 8 species of shellfish were asked. These questions were: Does your household eat (name of species)? If yes, how many times per year? Where do you usually eat it - home, restaurant or both? and If at home, do you buy it, get it as a gift or catch it yourself? The types of finfish eaten can be considered in two ways. First, the percent of respondents who eat a given species. Swordfish is most popular. Over 70% eat swordfish. Next most consumed are flounder and haddock at almost 70 percent. Salmon (49%), cod (41%), bluefish (36%), and tuna (32%) are next in descending order. However, when the number of times per year a species is eaten is charted (see Figure 1), cod is the most frequently consumed (almost 20 times per year), followed by haddock (17 times), flounder (16), salmon (13), scup (10) and swordfish (10).

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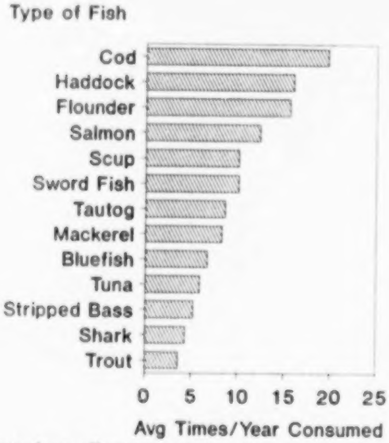
[1] Associate Professor, Consumer Studies

[2] Associate Professor and Director, Seafood Laboratory, Astoria

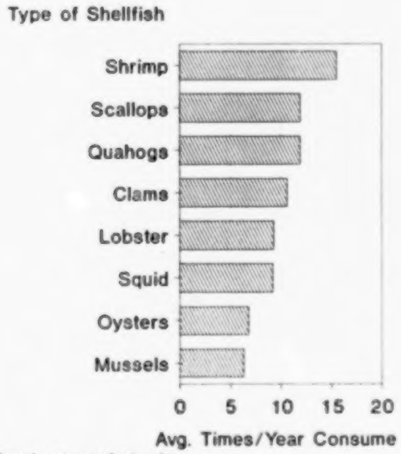
Figure 1
How Often Does Your Household Eat Each type of Finfish.



Based on all respondents who eat each type of finfish.

Almost ninety percent of respondents eat shrimp, followed by scallops (85%), lobster (80%0, clams (72%), and quahogs (61%). Oysters, mussels and squid are less popular with 32, 32, and 28 percent respectively. Shrimp is also the most frequently consumed (see Figure 2), about 15 times per year on average. Scallops and quahogs follow at 12 times per year each, followed by clams (10.5 times), lobster (9), squid (9), oysters (about 7) and mussels (about 6).

Figure 2
How Often Does Your Household Eat Each Type of Shellfish.



Based on respondents who eat each type of shellfish.

From a safety perspective, carcinogens and heavy metals tend to be stored in the skin, fat, dark flesh, organs and row. Therefore, respondents were asked whether they eat any of these. Nearly 38 percent eat the dark portions of the flesh. Next most commonly consumed are skin (15%), fat (12%), roe (11%) and organs (5%). About six (6) percent of respondents report that they sometimes consume finfish raw. Raw shellfish is often the subject of health advisories so it was important to learn which shellfish RI consumers actually eat raw. Littleneck clams are eaten raw by 61 percent of the 90 respondents who said they consume seafood raw. Oysters are a distant second (28%) followed closely by clams/quahogs (26%). Very few people eat shrimp, mussels, scallops or squid raw.

Since lobster is very popular in this state, and because roe and tamale pose a potential risk to humans, respondents were asked if they consume the tamale (liver) or roe (eggs) of the lobster. About four-fifths of those who eat lobster do not eat either of these parts.

Responding to concern about tracking seafood consumption for NBP, the research team included questions to ascertain if all household members consume the same seafood. Results reveal that 65 percent state that all members of their households consume the same seafood. Future work will involve analysis of the other 35 percent of the respondents' households as well as the quantity prepared at a given meal for both finfish and shellfish.

Respondents were asked if their seafood consumption had changed over the past two years. While 52 percent said there had been no change, one-third (33%) stated that they have increased their seafood consumption, while only 15% have decreased their consumption. This indicates that the negative publicity generated over the past two years regarding seafood safety may not have had a negative impact on consumption as industry analysts had feared.

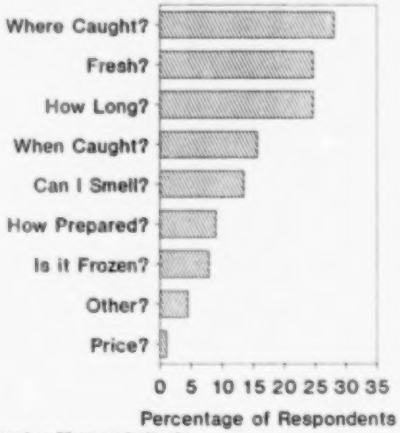
Reasons given for increasing seafood consumption included health, change in preference for seafoood, change in location (moving to a coastal area made good quality seafood more available) and greater availability of seafood in general. Decreased consumption was attributed to perceptions of high risk by about 18 percent of the respondents who had changed their consumption. Many of these stated that change in lifestyle had affected consumption. Changes in family structure - marriage, divorce, new children, children leaving home, and similar factors - seemed to make seafood consumption more difficult for some and less difficult for others.

A series of hypothetical questions were asked to assess what might happen to seafood consumption under a variety of alternative scenarios. In response to the question regarding expected reaction to a 25% drop in the price of seafood, 25% stated that it would greatly increase consumption, 30% said it would increase consumption somewhat, and 42% stated it would have no effect. Respondents also would be positively impacted by mandatory seafood inspection, catch date labeling and selection and preparation information, with 10, 32, 58; 12, 38, 50; and 6, 36, 58 percent of the sample responding the change would greatly increase, somewhat increase and have no effect on their seafood consumption, respectively. Establishment of a new seafood vendor in the neighborhood would have a much smaller impact on consumption with 75% of those responding stating that it would have no impact on them. Only 4% stated that it would have a great effect while 21% said it would have a somewhat positive effect. As expected, closing of the Bay due to pollution or oil spill would have a negative impact on seafood consumption. Bay closing would cause 38% to decrease consumption somewhat, 19% to decrease consumption greatly and would have no affect on 41%. If there were an oil spill in the Bay, 36% would decrease consumption somewhat, 28% would decrease greatly and for 36% there would be no impact on consumption.

Consumer Perceptions of Seafood Quality

When respondents were asked if they ask questions when they buy seafood, 42 percent replied that they do. Fifty percent said that they never ask questions while another seven percent of those who eat seafood do not buy it. Of those who do ask questions, the most commonly asked questions can be seen in Figure 3.

Figure 3
What Questions Do You Ask When You Buy Seafood?



Based on 89 respondents who ask questions.

Of the 89 respondents who do ask questions, most (28%) ask where the fish was caught or where it is from. Another 25 percent ask if it is fresh, with the same percentage asking how long it has been at the store. When it was caught, a crucial but difficult to attain piece of information, is only asked by 16 percent of those who ask questions. No one mentioned asking the retail clerk what they recommend.

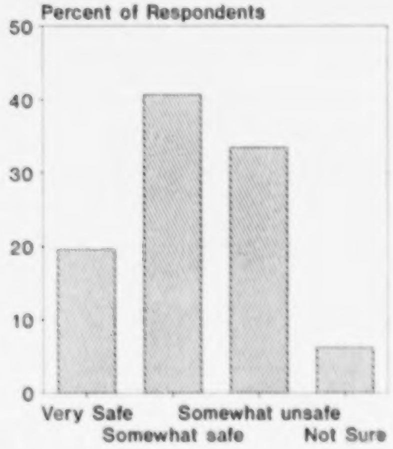
In answer to the open-ended question, What does high quality seafood mean to you, the majority (62%) answered fresh. This was followed by color (25%), smell (22%), high price (14%), trust the store(12%), and handling (10%). Other responses were given by less than ten percent of those responding.

Consumer Perceptions of Seafood Safety

When asked how safe they believe seafood is in general, 19.6% stated that they believe it is very safe;

40.7% believe it is somewhat safe; and 33.5% think it is somewhat unsafe. About six percent have no opinion. (Refer to Figure 4.)

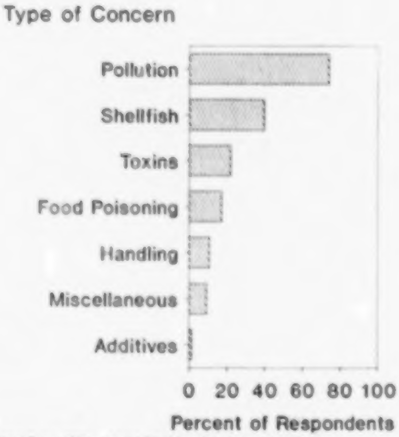
Figure 4
Consumer Perceptions of Seafood Safety



Based on 209 respondents.

In response to an open-ended questions asked only of the 151 respondents who expressed some degree of concern regarding the safety of the seafood supply, pollution was given most frequently. (See Figure 5.)

Figure 5
Consumers' Main Safety Concerns regarding Seafood



Based on 151 respondents who expressed concern for seafood safety. Respondents could cite more than one concern.

More than 70% of those responding to this question mentioned pollution. Forty percent mentioned the safety of shellfish as a major concern. Traditional concerns, toxins, food poisoning and additives, were mentioned by 22, 18, and 2 percent respectively. Ten percent mentioned that the way seafood is handled was a major concern to them indicating a high degree of understanding on the consumer's part of the perishable nature of seafood.

Conclusions

Consumers who reponded to this survey demonstrated a high degree of experience with seafood. Seafood consumption for this sample reflects their proximity to the coast and a supply of fresh seafood. Consumption data also revealed the wide variety of seafood consumed and the large amount that is obtained outside the conventional market channels. While safety concerns exist among this sample, there is little evidence that it has caused consumers to refrain from seafood consumption. On the contrary, consumption appears to be increasing. There appears to be modest, but not overwhelming, support for public policies which are aimed at assuring safety such as mandatory seafood inspection or at providing consumer information to facilitate the choice of quality seafood such as mandating catch date labeling.

These results present only the very first stage of data analysis. The use of inferential statistics to determine relationships between the important consumption, attitude and demographic variables will enable greater understanding of consumer perceptions of seafood quality and safety.

Seafood Safety and Quality Issues for the Consumer

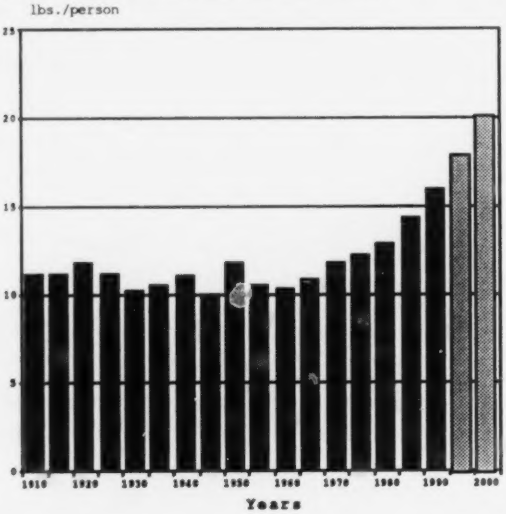
Michael T. Morrissey, Oregon State University-Astoria Campus, Astoria, OR[1]
Joan Gray Anderson, University of Rhode Island, Kingston, RI[2]

Potential safety problems in seafoods are related to the consumption of raw shellfish and a few species of finfish. Seafood quality assurance is changing from a traditional based buyer-seller relationship to one of dependence on inspection programs and consumer knowledge of seafood quality. As the seafood industry diversifies through the introduction of new species and final product forms, there will be a greater responsibility placed on the consumer to determine quality parameters for their seafood purchases.

Background

The seafood industry including harvesting, production, and marketing is undergoing rapid changes. This is mainly due to the dramatic increase in seafood consumption in the U.S. in the last two decades and increased demand worldwide. Figure 1 shows that seafood consumption in the U.S. has increased to a level of 15.9 lbs per person in 1990 and is projected to increase to 20 lbs per person by the year 2000.

Figure 1
U.S. Seafood Consumption 1910-2000



The reasons for this increase are twofold; seafood is viewed as a highly nutritious source of animal protein and the variety it presents to the consumer has made seafood increasingly popular to restaurateurs and domestic cooks alike. In the 1988 Report on Nutrition and Health, the Surgeon General stated that seafood is one of the healthiest low fat proteins and is recommended for individuals who wish to reduce fat consumption (Young, 1989). Seafood products consumed in the U.S. are usually low in fat. The fat that is present has a high concentration of omega-3 fatty acids which has shown beneficial effects for prevention of certain heart diseases such as atheroscierosis and strokes (Kinsella, 1988; Nettleton, 1987).

Today, the American consumer is eating more seafood for a variety of other reasons such as economics, varying life-styles and changing demographics. Minorities are increasing in the U.S. and several ethnic groups, such as Southeast Asians, traditionally have high seafood consumption rates. There are more than 300 species of fish and shellfish that are currently sold in the U.S. This large variety of fishery products to choose from was once thought of as a point of confusion for the consumer but is now looked upon as a strong selling point for both retailers and restaurateurs. As more Americans become willing to enter into new gastronomic areas, the large number of choices seafood presents to the consumer has elevated, from the fish and chips mentality to one more akin to fine cuisine.

Approximately 60% of the seafood consumed in the U.S. is from foreign imports (USDOC, 1990). Of this amount, slightly more than one-half comes from developing countries. This will probably increase through the next decade as the U.S. appetite for shrimp and tropical fish increases. This large import of seafood from abroad has raised concern from several consumer groups as quality control standards in many of the exporting countries are not as stringent as in the U.S. Most of the seafood we consume is ocean caught. There is strong scientific evidence, as suggested by a number of fisheries

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biologists, that the fishing industry is approaching the limits of harvest in the ocean. Although less than 10% of the fishery products consumed in the U.S. are from aquaculture sources, at present, it is felt that this percentage could reach more than 20% by the year 2000. As the demand for seafood products increases in the future, there will be increased imports and fishery products from aquaculture sources to satisfy the markets. There has been some justified concern that these changes may put the consumer at risk and compromise the beneficial effects of seafood consumption.

Several stories in the media over the last five years have focused on real and potential problems regarding safety and the consumption of seafood products. Concern exists about high mercury levels in swordfish, polychlorinated biphenyls (PCBs) in fatty fish such as blue fish and striped bass and contamination of heavy metals in shellfish harvested from polluted waters as well as outbreaks from emerging pathogenic microorganisms. In Prince Edward Island, Canada, a foodborne illness traced back to cultivated mussels caused the hospitalization of 135 persons and two deaths (Anonymous, 1988). Although the disease was related to a natural toxin, domoic acid from specific marine algae, the event resulted in a temporary shutdown of the regional industry and adverse impacts on consumer consumption of shellfish. In the summer of 1988, coastal pollution became a front page news story on the East coast of the U.S. Beaches were closed when hospital and sewage wastes were found. Cover stories in major newspapers and magazines reported the environmental contamination throughout the coastal regions. Reports of closed or contaminated fisheries in Texas, Louisiana, the Hudson River area by New York City, Boston's Quincy Bay, and the upper Narragansett Bay in Rhode Island were detailed. Official warnings about oysters, lobster, crabs, and English sole were published (Morgantheau, 1988). Regional consumers, unable to evaluate the safety of a given piece of seafood reacted by not purchasing seafood in these areas (Burros, 1988). The recent outbreak of cholera in Peru and its association with seafood harvested or washed in contaminated waters, has caused concern among federal agencies, fish importers and consumers in the U.S. (Brooke, 1991).

There has been a heightened concern about seafood in the media. Television programs such as 60 minutes and 20/20 have sensationalized specific incidents and have called into question the safety of all seafood. For example, a Sunday magazine article in a California newspaper on the hazards of Vibrio vulnificus was titled "Death on the Half Shell". This type of reporting has caused an outcry for strict legislation. Emergency regulations in California will require that by March 1991 retailers and restaurants that sell raw Gulf of Mexico oysters must post warnings about the threat of V. vulnificus (Anonymous, 1991). A waitress or waiter in California must say or hand the diner a card that reads, "eating raw oysters may cause severe illness and even death in persons who have liver disease, cancer or other chronic illnesses that weaken the immune system. If you eat raw oysters and become sick, you should seek immediate medical attention. If you are unsure whether or not you are at risk, you should consult your physician". Needless-to-say, this will have a negative impact on one's dining habits and put the unsuspecting consumer in an uncomfortable situation.

Much of the present concern with regard to quality and safety in seafood is due to the simple fact that there is no mandatory National Seafood Inspection Act as there are for other animal protein foods. Current seafood inspection systems include those that are mandated at the federal level, through the Food and Drug Administration (FDA) and those at the local level, as performed by state and health officials (Garrett, 1988). The U.S. Department of Commerce operates a voluntary seafood inspection program through the National Marine Fisheries Service (NMFS) on a fee-for-service basis that provides plant inspection and quality grading systems as well as laboratory services. The program has had mixed success and there is increasing pressure for a mandatory inspection system equivalent to that of meats. Currently there are two major bills in Congress; the Dingell bill in the House has the FDA as the regulatory agency, and the Mitchell bill in the Senate which sponsors the U.S. Department of Agriculture (USDA) as the main regulatory agency. It is assumed that a compromise will need to be worked out before a seafood inspection bill will be passed. There is recognition within the seafood industry itself that a seafood inspection act will, in the long run, be helpful to the industry and improve its relationship with seafood consumers. It is important that the final bill when passed be cost effective (there is a big question of who will pay for the inspection), be fairly implemented, and have real benefits to the consumer

(Vondruska, Otwell, and Martin, 1988).

Seafood Safety

In spite of the negative press over the last few years, seafood is regarded in the food science and health communities as a safe and highly nutritious source of protein. It was recently noted by the National Academy of Sciences that although seafood consumption in the U.S. has increased by one-third over the last two decades there has not been a concomitant increase in reported seafood-borne illnesses. In studying the foodborne illness statistics, there is a need to separate finfish related illnesses from those related to the consumption of raw shellfish. Once this is done, it can be shown that the consumption of finfish products is as safe as consuming beef and poultry products (Young, 1989). In the hysteria of the late 1980's, statements such as "the consumer has a ten-fold risk of becoming sick from eating fishery products than beef or chicken" were not uncommon in the press. The basis for these statements was how the data was interpreted. Statistics from the Center for Disease Control (CDC) from 1973 to 1987 showed the following numbers of outbreaks and cases (Bean and Griffin, 1990).

Table 1
Number and Percentage of Foodborne Disease Outbreaks and Cases 1973-87.

	Outbreaks		Cases	
	No.	%	No.	%
Beef	327	9	15812	10
Chicken	120	3	5528	3
Turkey	133	4	10419	6
Pork	252	7	7924	5
Finfish	540	15	3357	2
Shellfish	213	6	4648	3

Bean and Griffin, 1990

An outbreak is considered a food illness event, while cases represent the number of individuals reported ill at the outbreak. A company picnic with salmonella-laden chicken salad that caused 100 people to get sick would be reported as 1 outbreak with 100 cases. At the other end of the spectrum, a person who is ill after eating baked mackerel with a high histamine content at a restaurant is reported as one outbreak and one case. It is easy to see, under these circumstances, how a more negative picture than necessary can be painted for seafood safety . In the left-hand column of Table 1, finfish are responsible for a much higher number of outbreaks than the other animal proteins. Consumption of finfish is much less than that of red meats or poultry products. Calculating the number of outbreaks per lbs of consumption by product categories will allow one to erroneously conclude that the risk of illness from finfish is several times greater than that of beef or chicken. However, this is not borne out by the right-hand column and the number of cases. In this column we can see that finfish related food illnesses drops to 2% of the cases reported. When consumption rates are factored in, the risk of food illness from finfish is no greater than that from red meats or poultry products.

A further breakdown to the identification of the classes of agents that cause seafood illnesses in fish and shellfish is shown in Table 2.

Table 2
Causes of Seafood Illness Outbreaks 1973-87

	Finfish	Shellfish
Bacterial	54	36
Viral	1	11
Parasitic	6	0
Chemical	435	22
Unknown	44	144

Bean and Griffin, 1990

This table shows that the overwhelming majority of illnesses are caused by what the CDC classifies as chemical agents. These are not man-made chemicals and pollutants such as DDT and PCBs, but for the most part natural toxins that occur in the environment. This is illustrated in Table 3.

Table 3.
Chemical Causes of Seafood Illness Outbreaks 1973-87

	Finfish	Shellfish
Ciguatoxin	232	-
Histamine	199	-
PSP	-	21
Other	4	1

Bean and Griffin, 1990

Ciguatoxin poisonings are strongly linked with reef fish in tropical waters. Smaller reef fish eat specific types of algae that produce the toxin; these fish are in turn eaten by larger fish as the food chain is ascended, concentrating the toxin as this occurs. When larger fish are harvested and served for human consumption, most often in a restaurant, the person becomes ill after ingestion of the toxin. Histamine poisoning or scombroid poisoning (named after a species of fish in which the toxicity commonly occurs) is a form of natural intoxification as well. In this scenario, certain species of fish with high concentrations of histidine (a common amino acid) are kept under warm conditions or non-refrigerated temperatures and there is a rapid growth of histamine forming bacteria. When ingested, the chemical causes histamine related symptoms similar to allergy-like food intoxifications (Taylor, 1988). PSP is an acronym for paralytic shellfish poisoning that is associated with natural algae blooms called "red tides" that occurs off all the coasts in the U.S. Shellfish are filter feeders, and as they feed on the algae and concentrate the toxin, they become toxic themselves. All states have monitoring systems and will close shellfish harvesting areas when there is a red tide event. However, there are a number of other algae related seafood toxins associated with shellfish and this is becoming an area that needs to be closely watched.

Although there is concern about seafood safety among the scientific community and regulatory agencies, the "current negative perception in consumers' minds (regarding fish safety) is not warranted when the health risks of seafood are compared with other food sources" (Young, 1989). The National Academy of Sciences Committee on Evaluation of the Safety of Fishery Products (Ahmed, 1991) has identified the major seafood consumption risks (in order of importance) as:

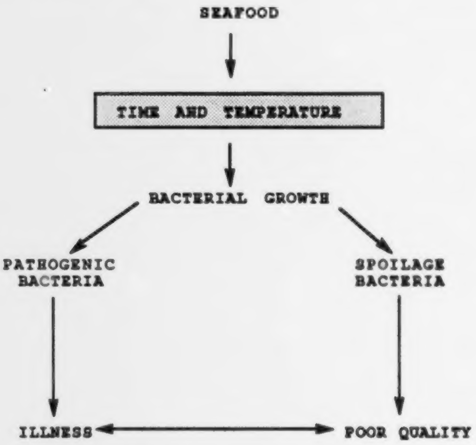
- raw or lightly cooked shellfish
- highly regionalized reef-associated fish in tropical areas
- species of fish closely associated with histamine production
- traditionally fermented foods
- seafoods that may present foodborne disease hazards from errors in handling, storage or processing

The committee states simply that "most current health risks associated with seafood safety originate in the environment and should be dealt with by control of harvest at the point of capture." Their recommendations with regard to seafood inspection are ambivalent. They state that "Inspection at the processing level is important to maintain the safety of seafoods, but there is little evidence that increased inspection activities, at this level, would effectively reduce the incidence of seafood-borne disease." The committee's main concern is not with seafood inspection but with improvement of the disease surveillance system. There is a need to better understand the nature of seafood hazards and obtain data to develop meaningful risk identification and risk assessment (Ahmed, 1991).

Seafood Quality

Although there has been a strong focus toward seafood safety, quality issues are important to the consumer and are some of the major marketing issues in the seafood industry today. Quality and safety issues are inter-related. This is demonstrated in Figure 2.

Figure 2
Interrelationship between Seafood Quality and Safety



Although this figure is an oversimplification and represents only the microbiological events that can take place in seafood, it is obvious that abuse of temperature and time with sensitive seafood products will lead to exponential microbial growth and in short order poor quality. This may express itself in terms of fishy odors (which should steer the customer away from purchasing the fish) or poor texture (which may not be evident until consumption). Fish that are of poor quality will not necessarily make one ill, but will affect consumer purchases. Conversely, fish may be toxic (ciguatoxin) but have all other quality attributes of freshness and high quality. Nonetheless, there is a higher safety risk from eating seafood that is of poor quality, therefore, the consumer will benefit by choosing fishery products of higher quality not only in eating satisfaction but in reduced risk of illness.

Seafood quality can be measured objectively (Gorga and Ronsivalli, 1988). There are chemical tests that quantify biochemical compounds that are products of microbial or endogenous enzymatic action. Some of these compounds such as oxidized fatty acids or trimethylamines have a direct relationship with rancid and fishy odors which reflect decomposition (Hutlin, McDonald and Kelleher, 1982; Hebard, Flick and Martin, 1982). There are physical testing instruments as well that measure texture and color. Also very important are standard microbiological tests. General microbial analyses will describe the total aerobic microbial count which increases in direct relationship to time and temperature of storage. More specifically, there are microbial tests for pathogenic bacteria and viruses if there is concern that the seafood may have been harvested or processed under questionable conditions (Ward and Hackney, 1990). These chemical, physical and microbiological analyses are, for the most part, laboratory tests and while they are valuable tools for the seafood researcher in understanding the processes by which fish deteriorates in quality, these tools are not readily available to the processor, retailer or consumer. Seafood quality, as judged in the industry, is still a subjective assessment of freshness, color, texture odor and ultimately edibility (Ronsivalli, 1982; Sawyer, 1987). Seafood quality is in many ways determined by what wholesalers and retailers think the consumer wants. Brought to a logical end point, seafood quality is in the eye of the consumer and they should be the final judges.

In several surveys concerning U.S. seafood consumption, the issue of quality is a recurrent theme in the consumer's decision making process. Vondruska (1984) has analyzed a number of consumer surveys undertaken in the U.S. and has listed the attitudinal factors as the most influential with regard to the purchase of seafood. These are:

- eating satisfaction
- product quality
- health and nutrition
- ease of preparation
- economy, budget and price
- availability

The determination of quality, however, is more difficult. Anderson and Anderson (1988) state that quality is a multi-dimensional attribute that includes nutritional value, taste, freshness, color, odor, texture, serving size, incidence of parasites, and presence of microorganisms as well as a host of other factors. Connell (1975) defines intrinsic quality as the "sum of attributes that are inherent in the raw material." Although there are quality parameters that are similar, there are many differences in quality factors as well as final organoleptic attributes among several species. How the consumer reacts to the introduction of new species and value-added products, information about the nutritional aspects of seafood, heightened awareness of issues regarding seafood safety and quality is of paramount interest to the seafood industry and regulatory agencies. In the past, a large portion of seafoods marketed in the U.S. were sold at small retail outlets or specialty stores. To a certain degree an element of trust was established between the seller and the buyer. The quality decision making process was left in the hands of the professional, the fish seller and the assumption was that the seafood sold was fresh and of high quality. With the increased demand for fishery products that we have seen in the last twenty years, there has been a shift of responsibility for judging quality to the consumer. Many larger supermarket chains are selling fresh seafood and are competing with each other as well as the smaller fish stores. Moreover, the variety of the seafood and the distance from point of capture to point of retail sales has increased significantly. Thirty years ago, in many middle-size New England towns, Friday afternoon shopping would include the local fish store and a choice between several species of fish all caught within New England waters. Today, consumers shop for seafood on any day of the week and have a choice of fish species from local waters as well as countries they would be hard pressed to locate on a world map. Moreover, the retailer may not know the country of origin or what waters the fish actually came from. Red snapper from the Yucatan peninsula will have passed through one or two wholesalers, several brokers as well as the main distribution center for a major supermarket chain before it arrives in the local store. With the changes that have taken place in the last decade, it is not uncommon for the retailer not to know, anymore than the consumer, how fresh the product is or what quality parameters it may have.

Consequently, the quality assurance programs in seafood are changing and this can be summarized in the following table.

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Table 4
Quality Assurance in the Seafood Industry

CONVENTIONAL ASSURANCES

Consumer's Trust in Retailer
Consumer's Knowledge of Seafood Quality

EMERGING ASSURANCE SYSTEMS

Grades and Standards
National Inspection Program
Consumer Education

As was mentioned previously, there has been an emphasis on consumer's trust in the retailer as well as their own knowledge of the seafood they were purchasing in the past. This trust and knowledge revolved around a few species that were locally caught and well understood. This has changed due to several factors that have been discussed in the paper. How the consumer will judge seafood quality in the future will be through a combination of emerging assurance systems and an expanding knowledge base. Grades and standards are established for several food products and are used by the consumer who insists on quality assurance at a certain level. These grades and standards are now being incorporated into the seafood industry through the voluntary inspection program with DOC and NMFS. More and more large supermarket chains are demanding that shore based processors have some form of seafood inspection program so that the supermarkets can pass this assurance on to the consumer. The National Seafood Inspection Act is expected to be passed by 1993, although there is no guarantee that this will occur. If passed, all seafood will undergo inspection similar to that which applies at present to beef and poultry. Because the majority of the seafood is imported, it is expected that Memorandums of Understanding between regulatory agencies in exporting countries and the seafood regulatory agency in the U.S. would need to be in place.

It needs to be pointed out that these inspection programs, however good they may be, will focus on seafood safety aspects, while assuring quality standards at acceptable levels. The main responsibility for quality assurance, that is quality at the higher levels, will fall on the retailer and the consumer. Because of the demands placed on the consumer, there is a present and future need for consumer education in the area of seafood quality as well as seafood safety. For the consumer to be effective in demanding quality, teaching programs as well as research that are directed toward increasing the consumer's knowledge of quality parameters and determination skills, benefit and risk trade-offs, decision-making inputs and outputs in purchasing seafood need to be implemented. There is little base-line data of what the consumer understands about the issues of quality and safety in seafood. The following papers in this section will shed some light on the consumer's perceptions of seafood safety and quality. With this beginning, it is hoped that adequate information can be gathered to formulate effective goals for consumer education in this area, and that consumer education programs can be developed to best fit their needs in the future.

References

Ahmed, F.E. (Ed.) (1991) Seafood Safety: Committee evaluation of the safety of fishery products. Washington, D.C.:National Academy Press

Anonymous (1991) Gulf oyster warning issued. National Fisherman, April, p. 72.

Anonymous. (1988) Shellfish scare hits Atlantic Canada. Seafood Business (Jan./Feb.), p. 30-31.

Anderson, J.L. & Anderson, J.G. (1988) Economics and seafood quality. In M.T. Morrissey (Ed.) Postharvest Fishery Losses, Kingston, R.I.:ICMRD/URI Publication.

Bean, N. H., & Griffin, P.M. (1990) Foodborne disease outbreaks in the United States, 1973-1987: pathogens, vehicles, and trends. Journal of Food Protection, 53(9), 804-817.

Brooke, J. (1991) Cholera outbreak plagues Americas. The Oregonian, p. A7, Portland, OR.

Burros, M. (1988) Beach pollution this summer is scaring a lot of people away from seafood. New York Times, Aug. 10, p. C1.

Connell, J.J. (1975) Control of Fish Quality. Farnham, England: Fishing News Books.

Garrett, E.S. (1988). Microbiological standards, guidelines and specifications and inspection of seafood products. Food Technology, 42(3), 90-93.

Gorga, C. & Ronsivalli, L.J. (1988) *Quality assurance of seafood*. N.Y.:Van Nostrand Reinhold Pub.

Hebard, C.E., Flick, G.J., & Martin, R.E. (1982) Occurrence and significance of trimethylamine oxide and its derivatives in fish and shellfish. In R.E. Martin, G.J. Flick, D.R. Ward (Eds.), *Chemistry and Biochemistry of Marine Food Products*, Westport, CT:AVI Publishing Co.

Hutlin, H.O., McDonald, R.E., & Kelleher, S.D. (1982) Lipid oxidation in fish muscle microsomes. In R.E. Martin, G.J. Flick, D.R. Ward (Eds.), *Chemistry and Biochemistry of Marine Food Products*, Westport, CT:AVI Publishing Co.

Kinsella, J. (1988) Fish and seafoods: nutritional implications and quality issues. *Food Technology* *42*(5): 146-150.

Liston, J. (1990) Microbial hazards of seafood consumption. *Food Technology*, *44*(12), 56-62.

Morgantheau, T. (1988) Don't go near the water. Newsweek p. 42-47.

Nettleton, J. (1987) *Seafood and Health*. Huntington, N.Y.:Osprey Books.

Ronsivalli, L.J. (1982) A recommended procedure for assuring the quality of fish fillets at point of consumption. *Marine Fisheries Review*, 44(1), 8-15.

Sawyer, F.M. (1987) Sensory methodology for estimating quality attributes of seafoods. In D.E. Kramer, & J. Liston (Eds.), *Seafood Quality Determination*, N.Y.:Elsevier.

Taylor, S.L. (1988) Marine toxins of microbial origin. *Food Technology* *42*(3), 94-98.

United States Department of Commerce (1990) *Fisheries of the United States*. Washington, D.C.:USDOC/NOAA.

Vondruska, J. (1984) U.S. consumer attitudes toward fish *Infofish Marketing Digest*, *3*, 30-34.

Vondruska, J., Otwell, W.S. & Martin, R.E. (1988) Seafood consumption, availability and quality. *Food Technology*, *42*(5), 168-172.

Ward, Donn R., & Hackney, Cameron R.(Eds.) (1990) *Microbiology of marine Food products* N Y.:Van Nostrand Reinhold/AVI,.

Young, F.E. (1989) Is fish safe to eat? Consumer Research, Aug., p. 10-12.

Consumer Preferences for Seafood Quality Characteristics: Results of a Conjoint Analysis

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An experimental study was conducted to elicit factors which consumers use to evaluate quality of retail seafood products. Five characteristics were identified, each with two or three levels, and used to create 108 hypothetical products. Respondents were asked to rank and scale a subset of these products. Results indicate that consumers value age and odor as most important when evaluating seafood quality.

Introduction

When a consumer is making a purchasing decision regarding fresh seafood, he/she is generally able to look into a fresh seafood counter at fillets and steaks of finfish, and fresh shellfish, either in the shell, or as with scallops, out of the shell. The information they have readily at hand is:

a. the type of store they are in (i.e. did they choose to purchase the seafood in a seafood specialty store or in the supermarket where they do the rest of their shopping?);
b. the prices of the items as displayed in the case;
c. the visual appearance of the seafood (texture, color, etc).

Other information they are able to obtain by asking the clerk behind the counter, included:

d. may they smell the fish? (to judge the odor, hence the quality);
e. how fresh is the fish? (i.e. how long has it been since it arrived at the store).

At issue for the latter two pieces of information is whether: 1) the consumer realizes that they are allowed to smell the fish; and, 2) the consumer believes the clerk is telling them the truth about the date of arrival of the fish (either the consumer believes that the clerk does not know, but will not admit it, or that the clerk may be lying to move the product).

Each of these pieces of information may be considered to be proxies for quality indicators. Therefore, with this information base, the consumer processes a 'quality' index for the particular seafood they are thinking about purchasing, and makes the decision whether or not to purchase. The interesting issues which follow from this are related to how a consumer judges quality. For example, does a higher price indicate higher quality? In particular, how do consumers trade off between the various indicators? What leads a consumer to choose a particular portion of seafood over another?

Answers to questions such as those posited above are important for a variety of reasons. First, those involved in the fresh seafood sector of the food industry are interested in the factors which influence consumers' demand for fresh seafood. Altering these factors in particular ways may increase consumer demand. In particular, consumer misconceptions about visual appearance and odor could be addressed through consumer education. Second, understanding the factors which determine seafood quality from a consumer's perspective may aid in the implementation of policies dealing with seafood inspection. These policies are being formulated in the current session of Congress with legislation proposed which would institute a mandatory seafood inspection program.

Purpose

The purpose of this research was to determine the relative importance of various fresh finfish attributes that lead a consumer to be favorably inclined toward purchasing a piece of finfish; in other words, determining what types of attributes consumers use to judge quality seafood with available information.

Methodology: Conjoint Analysis

To achieve this purpose, a market research technique called 'conjoint analysis' was used. Conjoint analysis as a methodology became frequently used in marketing research in the early 1970's. This technique is also gaining increasing acceptance by economists as a tool to disaggregate a product into a bundle of attributes. Environmental economists often use 'contingent ranking' techniques for environmental valuation studies, a technique which is similar to conjoint analysis.

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Theoretical justification for this multi-attribute modeling of consumer preferences comes from the growing literature on consumer choice, including Lancaster (1971). The Lancaster characteristics approach to modeling demand assumes that each market good possesses a vector of characteristics (or qualities) that are objectively defined and measured by all producers and consumers and bear utility directly to the consumer. Consumers purchase and consume only certain combinations of goods and the level of utility is derived from the sum of characteristics belonging to these goods.

Green & Wind (1975) and Green & Srinivasan (1978) were among the first to propose the use of conjoint analysis as a marketing research methodology. Conjoint analysis incorporates the two assumptions of the Lancaster model, namely that each product is composed of various attributes while the utility the consumer derives from the product is a function of the product's attributes. In addition, conjoint analysis assumes that each attribute may have two or more levels. For example, price may be an attribute, while there may be more than one price (or level of price). This decompositional approach allows respondents to react to a set of hypothetical product descriptions, while the technique allows the analyst to separate the contribution of each attribute to the overall product value. The attributes that are chosen to represent the product are determined in part by the focus of the questions to be answered. More importantly, information on the consumer perceptions of the important attributes is attained directly from the consumer, either through focus groups or previous research.

The marginal contribution of a product characteristic to the average consumer's overall product preference is termed a 'part-worth'. There are a variety of statistical methods which can be used to estimate these values, including OLS, limited dependent variable techniques, and analysis of variance.

Conjoint techniques have been applied by agricultural and resource economists in assessing the importance of apple attributes (Manalo, 1990), determining willingness to pay for individual attributes of deer hunting trips (McKenzie, 1990), as well as by Anderson and Kusakabe (1989), Anderson and Brooks (1986) in analyses of the U.S. and Japanese salmon markets, and by Wirth, Halbrendt and Vaughn (1990) in an analysis of the striped bass market.

Application

In this study, the conjoint analysis technique was applied to the problem of identifying the relative importance of characteristics which consumers use to select quality seafood. Fifty-five seafood consumers were surveyed in an experimental market setting at the Food Science laboratory on the University of Rhode Island campus (see Anderson & Morrissey (1991) for more detailed information on the survey endeavor).

Five attributes - age, odor, type of store, price, visual appearance - were chosen. These attributes were chosen for two reasons. First, as discussed above, these particular attributes are easily discerned by the average consumer in most market settings. Second, these factors were shown to influence the assessment of seafood quality by consumers who were interviewed in a telephone survey in Rhode Island.

The age attribute was deliberately left nebulous, and could be interpreted as either catch date or how long it had been in the store. The clerk is most likely to know only when the fish arrived. Handling before the fish arrives at the store, no matter what the length of time since caught, influences the quality, but is more difficult to determine and quantify. Therefore, it was left to the respondent to interpret the age attribute.

Because fresh seafood is very general, and fresh shellfish is more difficult to assign 'freshness' attributes to, the conjoint experiment focused on fresh finfish. In addition, because there are many species of finfish with a variety of characteristics, flounder was chosen to facilitate the ranking process. Flounder was chosen because a large number of respondents to the telephone survey indicated that flounder is frequently consumed.

Each attribute was assigned different levels. Table 1 shows the various attributes and the corresponding levels. The price levels corresponded roughly to current market conditions. Seafood versus grocery stores were identified as the two types of stores to determine if the consumer had greater confidence of finding higher quality products in a seafood specialty shop.

Table 1
Attributes and Levels of Flounder Fillets

- Flesh quality
  - soft
  - firm
- Age
  - 1 day
  - 3 days
  - 7 days
- Odor
  - none
  - mild
  - strong
- Type of Store
  - seafood
  - grocery
- Price
  - $2.50 / lb.
  - $4.50 / lb.
  - $6.50 / lb.

This combination of attributes and levels create a total of 108 total possible combinations of attributes, too many to reasonably expect each respondent to rank. Addelman (1962) developed a procedure in which an orthogonal array of a subset of the 108 can be found. This subset is composed of 18 products, shown in Table 2.

Table 2
Orthogonal Array of Flounder Fillet Attributes

Product	Age	Odor	Price/lb.	Flesh Quality	Type of Store
1	3 days	strong	$6.50	firm	grocery
2	3 days	none	$4.50	firm	seafood
3	3 days	mild	$2.50	soft	grocery
4	7 days	strong	$4.50	soft	seafood
5	7 days	none	$2.50	firm	grocery
6	7 days	mild	$6.50	firm	grocery
7	1 day	strong	$2.50	firm	seafood
8	1 day	none	$6.50	soft	grocery
9	1 day	mild	$4.50	firm	grocery
10	3 days	strong	$2.50	soft	grocery
11	3 days	none	$6.50	firm	seafood
12	3 days	mild	$4.50	firm	grocery
13	7 days	strong	$6.50	firm	grocery
14	7 days	none	$4.50	soft	grocery
15	7 days	mild	$2.50	firm	seafood
16	1 day	strong	$4.50	firm	grocery

Survey Procedure

Each respondent was given a packet of index cards and told that each card represented a fillet of flounder with the characteristics found printed on the card. The respondent was then asked to rank the flounder fillets.

An orthogonal array of product attributes that simplifies to 18 products still creates a substantial number of products for a respondent to rank. The possibilities for confusion and mistakes are higher with such a large number of, in some cases, quite similar products. Therefore, the set of 18 products was further divided into subsets of 7 products each (6 products plus a 'control' card of product number 12 in each packet).

To obtain a complete ranking of all the products when further dividing the orthogonal array, it must be assumed that some respondents have identical preferences for the flounder attributes. For example, if three respondents are necessary to rank all 18 products, then those three respondents are assumed to have identical preferences for those product attributes. While this assumption is strong, it may not present serious problems because the attributes presented for the fish are quite broad. In addition, in weighing the bias which may result from confusion and mistakes on the part of the respondent from ranking 18 products, versus bias from dissimilar preferences between respondents ranking 7 products each, it was decided that the former could be larger than the latter.

The respondents were asked to rank the products from 1 to 7, with a rank of 1 equivalent to the product they would be most likely to purchase and 7 that which they would be least likely to purchase. The respondents were further asked to scale each product on a scale of 100 to 0. This scale is intended to represent the probability that a consumer would purchase the particular product in question if presented with the opportunity. For example, this gives the respondent the opportunity to indicate indifference between products. In addition, they may indicate that they would not be likely to purchase a product, even though they gave it a ranking of 1 because an attribute that they felt was important was not on the list.

Results

Before the respondents were asked to rank the flounder fillets, they were given a card which listed the five attributes. On this card they were asked to indicate the importance of each attribute in their decision making process. Table 3 shows the results, and one can easily see that the most important attributes to the consumer are the age of the fish and the odor. It is interesting that these are the two attributes for which the consumer does not know the levels because they either 1) did not know they could ask to smell the fillet, or 2) did not specifically ask the clerk the age of the fillet.

Table 3
Importance of Selected Seafood Attributes to Consumers

Attribute	Degree of Importance Very	 Somewhat	 Not
Flesh Quality	76	20	4
Type of Store	35	36	29
Age	82	13	5
Odor	78	16	5
Price	38	49	13

*Percentage of 55 respondents

The estimates of the part-worths of each attribute as derived from the regression estimates show the relative importance of each in the determination of overall quality for the seafood consumer. The regression estimates were obtained from an OLS equation in which product rank, Y, was regressed against indicator variables, X_i, of the presence or absence of each of the levels of attributes. For those attributes which had only two levels, type of store and flesh quality, the variable was defined as either negative one or one. Type of store was one if grocery, negative one if seafood, and flesh quality was one if firm, negative one if soft.

For those attributes with three levels, odor, age and price, two variables were specified for each. The variables were defined by some combination of -1, 0, and 1. To illustrate, price was given three levels, $2.50, $4.50 and $6.50. The lowest level was defined as (-1,-1), the next level as (1,0) and the highest level as (0,1). Define X_1 and X_2 as the variables for the price attribute, then X_1 is assigned a value of -1 and X_2 is also assigned -1 at the $2.50 level. Similarly, X_1 was 1 and X_2 was 0 for the level $4.50. Finally, for the last level, $6.50, X_1 was 0 and X_2 was 1.

Ordinary least squares was used as the estimation procedure. From the estimated parameters, part-worths are derived. To put the part-worths into a form in which the meanings are more intuitively clear, the part-worths are adjusted so that the least-desired part-worth level has a part-worth of zero, while the level with the highest part-worth has the largest adjusted part-worth. Thus, each of the levels which are the least desired for each attribute has a value of zero, which allows one to compare the estimates of the highest valued part-worth.

Table 4 shows the relative importance of the attributes, based on the values of the highest valued part-worth. Age is the most important attribute which the consumer uses to judge quality - assuming that they are able to obtain the information on age. Next is odor, again, assuming that they smell the fish. Visual appearance (flesh quality) is the third most important attribute, followed by price and, finally, type of store.

Table 4
Relative Importance of Attributes as Quality Indicators

Attribute	Relative Importance
Age	3.06
Odor	2.17
Flesh Quality	0.65
Price	0.33
Type of Store	0.13

Analysis and Conclusions

Of the five attributes identified as important by respondents of a telephone survey, the age of the fillet, which is the most difficult information attribute to reliably obtain, has been determined to be the most important quality indicator. This has serious implications for seafood quality. To assure the consumer that the fish is of the highest quality, and hence increase demand for fresh seafood, the retailer must provide the consumer with easy access to information on the freshness of seafood. This can be done in a variety of ways, the most commonly occurring being information conveyed by the clerk. The other way is through labeling. Fish labeled with its catch date provides an indicator of freshness.

Further research

There are limitations to this research project. In particular, generalization to seafood cannot be made without making the statement conditional on the results from the ranking of flounder fillets. In addition, results from other surveys conducted on the same respondents at the same time (Anderson, 1991) indicate that the color of flounder fillets as well as texture should have been included as an appearance indicator.

Future research will include alternative specifications of the ranking equation. Limited dependent variable models have higher predictive validity than OLS models. However, OLS models provide easy interpretation of the part-worth results. In addition, models such as logit models allow one to incorporate the information gathered from the scaling information of the products by each respondent.

References

Addelman, S. (1962) Orthogonal Main-effect plans for asymmetrical factorial experiments. Technometrics, 4, 21-46.

Anderson, J.G. & Morrissey, M.T. (1991) Rhode Island consumers' seafood consumption and perceptions of seafood quality in V. Haldeman (Ed.), The Proceedings of the American Council on Consumer Interests 37th Annual Conference.

Anderson, J.L. & Brooks, P. (1986) Conjoint analysis of the New England salmon market. Report prepared for Canadian Department of Fisheries and Oceans.

Anderson, J.L. & Kusakabe, Y. (1989) Analysis of the Japanese Salmon Market. Canadian Department of Fisheries and Oceans, Economic and Commercial Fisheries Report N. 56. D.F.O. Vancouver, BC.

Anderson, J.L. (1988) Current and future market for salmon in the United States. in Proceedings of Aquaculture International Congress and Exposition. Vancouver Trade and Convention Centre. Vancouver, B.C.

Cattin, P. & Wittink, D.R. Commercial use of conjoint analysis: A survey. Journal of Marketing Research, 46, 44-53.

Green, P.E. & Wind, Y. (1975) A new way to measure consumers' judgements. Harvard Business Review, 53, 107-117.

Green, P.E. & Srinivasan, V. (1978) Conjoint analysis in consumer research: Issues and outlooks. Journal of Consumer Research, 5, 103-123.

Lancaster, K.J. (1971) Consumer Demand: A new approach. New York: Columbia University Press.

Manolo, A.B. (1990) Assessing the importance of apple attributes: An agricultural application of conjoint analysis. Northeastern Journal of Agricultural and Resource Economics, 19(2), 118-124.

McKenzie, J. (1990) Conjoint analysis of deer hunting. Northeastern Journal of Agricultural and Resource Economics, 19(2), 109-117.

Wirth, F.F., Halbrendt, C.K. & Vaughn, G.F. (1990) Conjoint analysis of the mid-Atlantic food-fish market for farm-raised hybrid striped bass. Selected paper, Northeastern Association of Agricultural and Resource Economics, annual meetings, Truro, Nova Scotia.

Consumer Perceptions of Finfish Quality

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The accuracy of consumer perceptions of finfish quality, defined as freshness, was measured against a panel of experts and objective laboratory analyses. Fillets of cod, salmon and flounder were purchased from a retail outlet and stored for 0, 5 and 10 days to simulate quality changes. Rankings of consumers and experts were statistically similar in most cases. This indicates that consumers are able to judge fillet quality when evaluating fish in a systematic manner.

Introduction

Consumers today are selecting foods which are healthier and more nutritious. Inclusion of more seafood, especially finfish, would contribute a low calorie, low fat, high protein alternative to red meat or pork. Despite these advantages, seafood consumption is much lower than other flesh foods (Kinsella, 1988, Martin, 1988) and comprises only 4 percent of main meal choices (NMFS, 1981).

Lack of, or variable, quality has been identified as a main reason for infrequent consumption among consumers (Kinsella, 1988, N.O.A.A.,1988). Consumer perceptions of seafood quality are not well known. Their understanding of quality may be quite different from those of experts or retailers (Bisogni, Ryan & Regenstein, 1987). Seafood is currently the only flesh food not under mandatory inspection. This places more responsibility on the consumer to ascertain quality (Bisogni et al., 1987, Hadlett & Raab, 1990).

Seafood deteriorates much more rapidly than other flesh foods (Vondruska, Otwell, Martin, 1988). For this reason, freshness is considered to be the criterion by which quality is measured. Quality is often expressed as a function of storage time (Learson, 1969). Quality was defined as freshness in our study and quality changes were simulated by storing samples for different periods of time.

Martin (1988) defines freshness as the degree to which deterioration or spoilage has taken place. These changes are microbial or chemical in nature which lead to changes in texture, color, odor and flavor (Gorga, 1988). Siang and Tsukuda (1989) state that the methods for assessing quality can be broadly categorized into three areas, sensory (odor, color, texture etc.), microbiological and chemical. Laboratory analyses assess the latter two categories, consumers and experts measured the first. Data from all three categories must be weighed.

The objective of this study is to determine the accuracy of both consumer and expert perceptions of seafood quality as considered against the objective standards of quality which result from laboratory testing. Although much has recently been written about how consumers perceive and evaluate seafood quality and safety, research to explore the relationship between consumers' perceptions and laboratory results has been minimal. This study combines theory and methodology from a variety of fields- economics, food science, consumer behavior- to explore the similarities and differences between three different sets of seafood evaluations: 1) those of food scientists, 2) those of consumers, 3) objective laboratory tests.

Materials and Methods

As part of a larger Sea Grant project on consumer perceptions of seafood quality, 55 Rhode Island consumers and 5 experts in seafood were invited to the University of Rhode Island Food Science and Nutrition Center to evaluate actual samples of three species of finfish which had been aged under controlled conditions to effect quality changes.

Fillets of cod, flounder, and salmon were purchased from a retail market with a high quality reputation and stored for 0, 5 and 10 days. Storage conditions were designed to resemble those of the retailer. Care was taken to ask the retailer for the freshest fillets possible. Consumers and experts ranked the samples on a score of 1-4 for general appearance, color, odor, and texture. Microbial and chemical analyses were being conducted concurrently.

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Four different laboratory tests were performed on the seafood specimens. The TBA (Thiobarbituric Acid) test, which measures the oxidative deterioration of lipids, was conducted only for salmon, as it is a test for fish with a high fat content and measures chemicals associated with rancidity (Tarladgis,1960).

The TVB (Total Volatile Base) test measures the level of protein deterioration. This is an excellent quality indicator as fish is comprised mainly of protein. The emergence of these bases correlates well with ammonia content, a main contributor to "fishy" odor and flavor. As quality declines, TVB scores increase.

The TMA (Trimethyl Amine) test assesses the deterioration of TMA-oxide to TMA, a compound which contributes to off odors (Dyer, W.J., 1945). It is considered an excellent quality indicator for spoilage of white-fleshed fish, especially cod. If levels of TMA are over 10-20 mg/100 g fish, it is regarded undesirable.

The aerobic plate count is a good overall indicator of the degree of spoilage and approximates the numbers of live bacterial cells per gram of fish. Upon storage, the microbial numbers increase exponentially. Generally, up to 10,000,000 colony forming units (CFUs) per gram are acceptable for consumption. Above this level, the flesh is considered spoiled.

Results and Discussion

All laboratory procedures were performed in triplicate. The mean values are represented in Table 1 and Figures 1, 2 and 3. Laboratory analyses (TMA, TVB, APC) indicated that the samples of cod and flounder were representative of fish kept 0, 5, and 10 days in storage (Figs 1, 2 and Table 1). An increase in the chemical values measured (TMA, TVB, TBA) corresponds to a decrease in freshness, or quality. Our results for cod and flounder showed that the level of spoilage increased almost linearly with days in storage. However, there were no differences in the chemical or microbial tests for the 0 and 5 day salmon. It appears that the sample picked up 5 days prior was slightly fresher than the sample obtained on the day of the evaluation. The TBA test, performed only for this species, indicated that the 0 day sample had a slightly higher level of fat decomposition. A possible explanation would be poor handling (temperature/time abuse, physical mishandling) of the 0 day salmon probably at the level of the wholesaler, and/or the retailer.

Figure 1
Trimethyl Amine Levels of Three Samples of Three Species

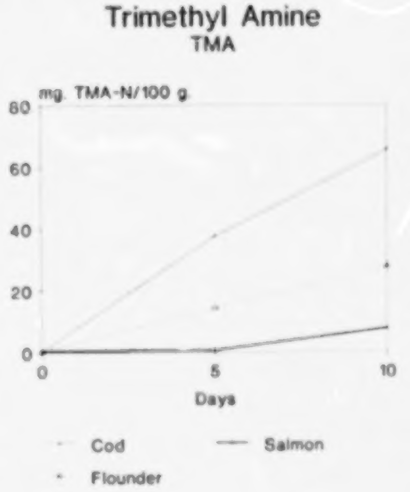

Figure 2
Total Volatile Base for Three Samples of Three Species

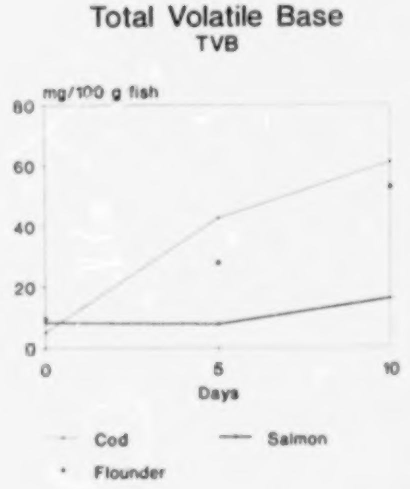

Figure 3
Thiobarbituric Acid Levels of 0, 5 and 10 Day Old Salmon

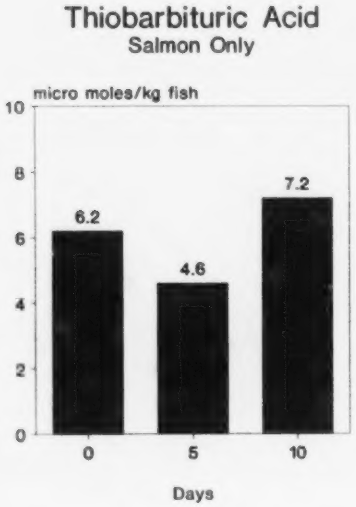

Table 1
Aerobic Plate Count (in thousands) for Three Samples of Three Species

Microbiology
Aerobic plate count in thousands

Species	Day 0	Day 5	Day 10
Cod	548.75	4,325	26,205
Salmon	777.6	990	309,920
Flounder	965.5	2,317	31,920

The microbiological analysis showed similar results for cod and flounder. There were no differences in the 0 and 5 day salmon. According to Table 1, the 10 day samples of all three species exceeded the recommended limits for consumption.

The means of the scores for both the consumer and expert groups were calculated. A series of t-tests were performed to see if there were any significant differences in the way the two groups evaluated the samples. Means were tested for significant differences at the 0.1, 0.05 and 0.01 levels.

For the cod samples, both the consumer and expert groups rated the 0 day old sample very high. There were no significant differences between the means of the scores; however, the experts rated each attribute higher. For the 5 day sample, there was a significant difference at 0.05 confidence level for the texture score only. Due to improper handling at the processing level, the fillets purchased that day had very poor texture and uniformity. This flaw in appearance seemed to influence the other scores, which were also quite low. There were no significant differences in the way the two groups rated the 10 day sample, although the experts assessed the odor lower. These scores were slightly higher than the 5 day sample, although the laboratory analyses clearly show the 10 day sample in a more advanced state of decomposition.

Evaluation of the salmon resulted in more differences between the two groups. The experts rated the overall appearance and texture slightly higher on the 0 day sample, but the same trends were observed. The experts rated the 5 day sample higher at the 0,05 significance level for all attributes and gave odor a perfect score of 4.0. The only category with a significantly different rating between the two groups for the 10 day sample was odor, which the expert group recognized as poor and scored accordingly.

The 0 day flounder was measured quite high by both groups. Again, the experts' mean scores were significantly higher in all categories except texture. The 5 day sample was evaluated low in general, and scores of the expert group were the lowest. The color was off, appearing greyer in this sample than the other two ages of the same species. The 10 day specimen of flounder was judged approximately equal to the 5 day. Again, poor appearance, especially in regard to color, seemed to influence the groups perception of quality.

Conclusions

Although both consumer and expert groups exhibited the same trends when scoring the samples, the experts scores were more extreme, the fresh higher and older fish lower. This may indicate that the experts were more confident in scoring. The experts observed more subtle differences, primarily in odor. Both groups accurately identified the very fresh samples, but were mislead as the fish got older.

The salmon scores had the most variation among the two groups and cod had the least. Both groups were influenced by appearance. Consumers seem to put more emphasis on physical attributes such as color and texture. The expert group used odor as the main indicator of freshness, or quality, and the scores were closely correlated to the laboratory results. Overall, the consumer groups' scores had the same inclination as the experts, signifying that they were indeed competent when judging quality. Fresh seafood is readily available in Rhode Island and the participants of this survey presumably consume more seafood than typical. Although this was a valid sample, it may contain more knowledgeable and experienced seafood consumers who are not representative of the average U.S. consumer. Results of this study may indicate that consumers who are experienced with seafood are quite skilled at identifying quality levels. Thus, it might be expected that as consumption increases, consumers will become increasingly able to judge quality attributes.

References

Bisogni, C.A., Ryan, G.J. & Regenstein, J.M. (1987) What is fish quality? Can we incorporate consumer perceptions? Proceedings of the International Symposium on Seafood Quality Determination. University of Alaska Sea Grant College Program, Anchorage, Alaska, U.S.A., 10-14 November 1986.

Dyer, W.J. (1945) Amines in fish muscle-development of TMA and other amines. J. Fish Res. Bd., Canada, 6(5).

Gorga, Carmine (1988) Quality assurance of seafood. N.Y., N.Y., A.V.I.: VanNostrand Reinhold.

Hadlett, H.M., Raab, C.A. (1990) Consumer perceptions of fresh fish quality. Journal of the American Dietetic Association, 90(8), 1109-1110.

Kinsella, J.E. (1988) Fish and seafoods: nutritional implications and quality issues. Food Technology May, 146-150.

Learson, R.J. (1969) A new approach for evaluating the quality of fishery products. Bureau of commercial fisheries technological laboratory. Emerson Ave, Gloucester, MA, 01930.

Martin, R. (1988) Contaminants in relation the quality of seafoods. Food Technology December, p. 107-108.

National Marine Fisheries Service (1986) Fisheries of the United States, NOAA, Washington, D.C., April 1986.

National Oceanic and Atmospheric Administration (1988) Analysis of consumer attitudes toward fish and seafood. Report for the National Seafood Promotional Council, Washington. D.C.

Siang, N.C. & Tsukda, N. (1989) Laboratory tests and equipment for quality assessment of chilled and frozen fish. Infofish International June, p. 24-27.

Tarladgis, B., Watts, B. & Younathan, M. (1960) J. Amer. Oil Chemists' Soc. 37(44).

Vondruska, J., Otwell, W.S. & Martin, R.E. (1988) Seafood consumption, availability, and quality. Food Technology May, p. 168-172.

Consumer Perceptions of Seafood Safety: A Case Study of the Northeast Market for Blue Mussels

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Two consumer surveys were conducted in the northeastern United States in 1990 to examine consumer perceptions of seafood safety and the impact of those perceptions on demand for seafood. Using blue mussels as a case study, preliminary results indicate that consumers perceive some risk in consuming seafood and that this risk is particularly high for consuming mussels. Mandatory seafood inspection could help reduce consumers' perceived risk from eating seafood, while consumer education could help eliminate consumer misconceptions about seafood safety.

Introduction

Currently in the United States there is no federally coordinated mandatory seafood inspection program similar to that in place for the inspection of red meats and poultry. Those seafood inspection procedures in place include a variety of programs mandated at the federal level through the Food and Drug Administration (FDA) and those at the local level performed by state health and marine resource agencies, all of which engage in a variety of services from water monitoring to plant inspection to the testing of imported seafood. The U.S. Department of Commerce operates a voluntary, fee-based seafood inspection program through the National Marine Fisheries Service (NMFS) that provides plant inspection, quality grading and laboratory services. The uncoordinated manner in which seafood is inspected and monitored in the U.S. has led the National Academy of Sciences Institute of Medicine, in its preliminary assessment of seafood safety in the United States, to conclude that "the present federal monitoring and inspection system is too limited in frequency and direction to ensure seafood safety" (Committee on the Evaluation of the Safety of Fishery Products, p.16, 1991).

Recently there has been a deluge of media publicity regarding the public health consequences of no mandatory seafood inspection and mounting public pressure for a seafood inspection system. In 1990, no less than seven bills were proposed before Congress to establish a mandatory federal seafood inspection program, and seafood inspection is on the 1991 Congressional agenda.

In the call for seafood inspection, the governmental and public focus has been and still is the maintenance of a clean and wholesome seafood supply to protect the public health. Another benefit to mandatory seafood inspection which is often overlooked by legislators will be an increase in consumer confidence in seafood and therefore an increase in demand for seafood.

This paper focuses on consumer perceptions and attitudes regarding seafood safety and how these perceptions might currently impact seafood demand. The blue mussel (Mytilus edulis) industry has been one sector of the seafood industry which has been particularly hard hit by media publicity of recent incidents of shellfish poisoning and an eroding consumer confidence in and demand for the product. Using blue mussels as a case study, two consumer surveys were conducted in the northeastern U.S. in 1990 to probe consumer perceptions of seafood safety, how these perceptions impact consumer demand, and what consumer would be willing to pay to reduce the health risk from eating mussels and other seafood.

First, a brief background of the U.S. blue mussel industry will be presented along with a discussion of some of the recent seafood contamination incidents which have affected the mussel market. Next, preliminary results pertaining to consumer perceptions of seafood safety will be presented. Finally, the potential impacts of consumer perceptions on seafood demand will be discussed, as well as the implications of consumer perceptions for mandatory seafood inspection.

The U.S Blue Mussel Industry

The U.S. blue mussel industry has experienced rapid and significant changes in the past decade. Once considered a bait fish and targeted primarily for ethnic markets, blue mussels have begun to attain gourmet status and are now found in white tablecloth restaurants, gourmet shops and supermarkets throughout the U.S. Landings of blue mussels in the U.S., concentrated mainly in the Northeast where they are harvested both in the wild and increasingly through aquaculture, have increased dramatically from 17.8 million pounds in 1980 to 55.5 million pounds in 1989, a 212% increase in nine years (USDC 1991). The ex-vessel value of mussels was approximately $3.4 million in 1989, up 250% since 1980 (USDC 1991).

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U.S. production and consumption of mussels are meager when compared to that of many European countries. For example, France produced 111.8 million pounds in 1988, the Netherlands 170.7 million pounds and Spain 459.5 million pounds (FAO 1990). Per capita consumption of mussels is estimated to be approximately 4.6 pounds per year in France, 4.8 pounds per year in the Netherlands and 10.3 pounds per year in Spain (De Franssu 1990). In contrast, estimated U.S. per capita consumption is less than a quarter pound per year. Indeed, compared to many European countries where aquaculture of mussels has existed for centuries and consumption is substantial, the U.S. market appears to be barely tapped.

Despite the expansion of the U.S. market, there has been a downward trend in wholesale prices, suggesting that supply is growing faster than demand. Real wholesale prices have declined approximately 20 percent over the period 1984 to 1990 (Urner Barry Publications, Inc. 1984-1990).

Further development of this relatively young industry is threatened by:

(1) a lack of market research on consumer preferences and attitudes toward eating mussels with which to effectively promote and position the product; and

(2) a perceived risk from eating mussels prompted by recent incidents of shellfish poisoning and adverse publicity about seafood safety.

Without such information, mussel producers and dealers may not be able to effectively market their products and stimulate further demand.

Recent Incidents of Shellfish Poisoning

Recent incidents of shellfish poisoning and a flurry of publicity surrounding seafood safety contribute to the sluggishness of demand and pose a threat to further industry development. In the Northeast region a foodborne illness causing the hospitalization of 135 persons and three deaths occurred form eating cultivated mussels from Prince Edward Island, Canada (Committee on the Evaluation of the Safety of Fishery Products 1991). These mussels were tainted with an unusually high concentration of a natural algal toxin, domoic acid. The disease outbreak resulted in a temporary shutdown of the regional industry and substantial, though temporary, declines in consumption in both Canada and the U.S. (Seafood Business 1988).

Mussel producers and retailers also reported temporary declines in demand due to medical waste washing onto Mid-Atlantic and New England shores in the summer of 1988. In addition, a series of news broadcasts entitled "Killer Fish," which aired in New York, Boston and Philadelphia in 1988 deploring the safety of seafood contributed to a decline in demand (Blue Gold Mussel Farms 1989). More recently, the nationally broadcast television news program "20/20" aired a story in February 1990 which told of the threats of disease from eating raw shellfish, including oysters, clams and mussels. Some shellfish wholesalers and retailers, fearful of a negative impact on demand for shellfish and the resulting losses due to inventory spoilage, did not carry live shellfish for several weeks during and after the broadcast. The latest case of negative publicity directly related to mussels, occurred in June of 1990 when "20/20" aired a story about the 1987 Prince Edward Island mussel incident. These adverse consumer reactions result from a perceived health risk from eating mussels which stems not only from actual incidents of health problems, but perhaps more from media attention and consumer ignorance.

Incidents of health problems only underscore a widespread fear of eating shellfish. Shellfish, particularly filter feeding mollusks such as mussels, clams and oysters, have long been associated with the transmission of such health problems as paralytic shellfish poisoning (PSP) caused by a marine algae commonly known as red tide, and hepatitis due to pollution of the shellfish beds. In fact, the National Academy of Sciences Institute of Medicine found shellfish to be the cause of 57.5 percent of seafood related illness cases from 1978 to 1987 (Committee on the Evaluation of the Safety of Fishery Products 1991). However, during the period 1973 to 1987, shellfish and finfish only accounted for approximately five percent of all reported cases of foodborne illness with a known cause (Bean and Griffith 1990). Dairy products were the major cause of foodborne illness with 13% of all cases of foodborne illness (with a known cause) reported from 1973-1987, followed by beef with 10 percent and turkey with six percent (Bean and Griffith 1990).

Although these incidents of seafood related illness are cause for national concern for the protection of public health, they are also a cause for concern regarding the livelihood of the U.S. seafood industry, as these incidents and the barrage of media publicity have undermined consumer confidence in the seafood supply. As in the case of mussels, this lack of confidence in the seafood supply, particularly shellfish, poses a threat to the seafood industry in terms of reduced or stagnant demand for seafood. The seafood industry needs to know the extent of the consumer perceptions of seafood safety so that they can educate consumers and help them make more informed decisions in the market place.

This research examines consumer perceptions of seafood safety and suggests how those perceptions may impact demand using mussels as a case study. The question to be answered is: Do consumers perceive health risks associated with eating blue mussels, and are these perceived risks significantly higher for mussels than for some other seafoods? Finally, does the consumer's risk perception have a significant impact on the demand for mussels?

The Consumer Surveys

The Supermarket Survey

In order to investigate retail demand for mussels, an extensive in-person survey was conducted in conjunction with Great Eastern Mussel Farms of Maine who were engaged in a supermarket demonstration program. Approximately 500 consumers were interviewed in supermarkets located from New Jersey to Maine during late 1989 and early 1990. The demonstration program and cooperation from Great Eastern Mussel Farms allowed us the unusual opportunity of surveying consumers in a supermarket setting as they were offered free samples of freshly steamed mussels and were faced with a real purchase decision.

In designing the survey to gather information on mussel demand, demand was hypothesized to be a function of the retail price, price of substitutes such as clams, risk perceptions, seafood consumption, demographics and other variables. To this end, consumers were interviewed regarding their willingness to pay for mussels, prior mussel consumption experience, attitudes toward mussels and various value-added mussel products, seafood consumption habits, risk perceptions related to eating mussels and other seafood, and demographics. The willingness of Great Eastern Mussel Farms to allow interviews of potential customers about the sensitive issue of seafood safety only underscores Great Eastern's concerns about consumer risk perceptions and the impact on demand for mussels.

In an effort to avoid an emphasis on seafood safety problems in the sensitive setting of a supermarket, questions regarding seafood safety perceptions were limited to gather information on media exposure to seafood related issues, fears of eating mussels and risk perceptions of eating various foods. The following questions were asked at different stages of the interview:

(1) What have you seen or heard about seafood in the media lately?

(2) Why don't you eat mussels or eat them more often?

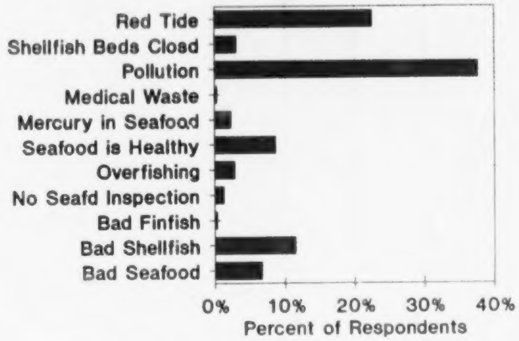
(3) Why are you afraid to eat mussels? (If the respondent said that he or she did not eat mussels because they were afraid.)

(4)What do you think your risk of getting sick is from eating cod, clams, bluefish, mussels, salmon, lobster, chicken and beef?

Preliminary analysis of the data gathered from these questions indicates that consumers do perceive a risk from eating mussels and that this risk is significantly higher than the perceived risk from eating some other seafoods. Furthermore, perceived risk of eating mussels is higher among those consumers who have never eaten mussels and those consumers who say that they would never purchase mussels.

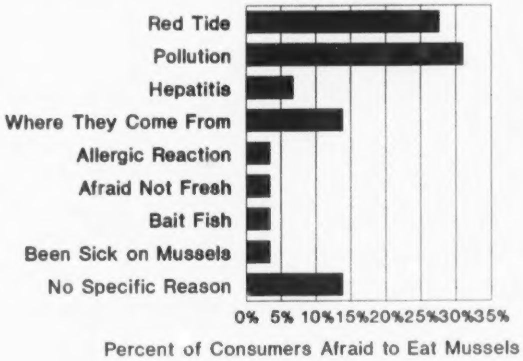
When asked about what they had seen or heard in the media regarding seafood, an overwhelming number of responses concerned some negative aspect of seafood (Figure 1). The most prevalent issue was pollution and the contamination of seafood mentioned by 37.6 percent of the respondents. This response was followed by red tide which was mentioned by 22.5 percent of respondents. The red tide response is not surprising in the Northeast where shellfish beds are routinely closed in the summer due to blooms of the red tide algae. There was frequent mention of contaminated seafood, particularly shellfish. Only 8.7 percent of the respondents mentioned the positive health aspects of seafood.

Figure 1
Consumer Media Exposure to Seafood Related Issues



When asked why they do not eat mussels or eat them more often, the responses varied, but 8.6 percent of the respondents claimed that they were afraid to eat mussels. These consumers were then asked what they were afraid of; 31 percent said that they were afraid that the mussels were contaminated by pollution, while another 27.6 percent said that they were afraid of the mussels being tainted with red tide (Figure 2). Fourteen percent of the respondents were wary of where mussels come from, many having seen mussels exposed on the beach at low tide or clinging to docks and pilings. Another 14 percent of the respondents who were afraid of mussels could not pinpoint a specific reason.

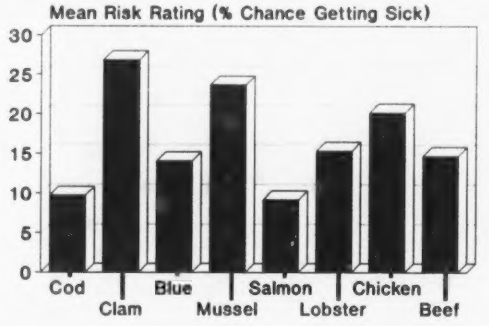
Figure 2
Why Are You Afraid to Eat Mussels?



The final question regarding risk perceptions was more direct. Consumers were asked what they perceived their chances of getting sick are from eating the following foods: cod, clams, mussels, bluefish, lobster, salmon, chicken and beef. They were then asked to rate their chances on a scale of 0 to 100, where 0 was no chance at all and 100 was a certain or 100 percent chance. This question was left purposefully open-ended regarding the definition of "sick" so as to elicit the consumer's overall perceived risk. It is important to note that the relative perceived risk of eating mussels compared to other seafood is the key issue here, rather than the absolute level of risk perception, since the 0 to 100 scale is not appropriate for eliciting realistic risk estimations.

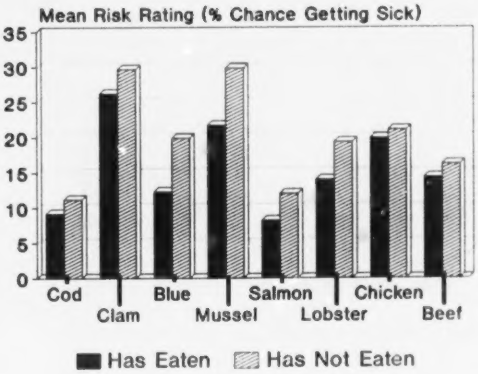
Results from the risk rating question are presented in Figures 3, 4 and 5 and are particularly revealing regarding consumer perceptions of risk from eating mussels relative to the risk perceived for other foods. Figure 3 illustrates the mean risk ratings of the total sample for all eight foods. Clams and mussels scored a significantly higher risk rating than the other foods, with average risk ratings of 26.9 and 23.7, respectively. Furthermore, mussels were rated as having a significantly greater health risk (at the 99 percent significance level) than all other seafoods except for clams. Mussels also scored a higher risk rating than chicken or beef, at the 95 and 99 percent significance levels, respectively. It is interesting to note that shellfish (clams, mussels and lobster) had the highest risk perceptions, followed by chicken and beef, with the finfish (cod, bluefish and salmon) scoring the lowest risk perceptions. Chicken has been the subject of much publicity recently as the public has been alerted to the widespread risk of salmonella.

Figure 3
Mean Perceived Risk Ratings for the Total Sample.



The sample was then divided among those respondents who had eaten mussels before (75 percent of the total sample) and those who had not (25 percent of the total sample). Again note that, not surprisingly, respondents who had never eaten mussels before had a significantly greater (at the 95 percent significance level) mean risk rating for mussels than those respondents who had eaten mussels (Figure 4). This result suggests that there are potential mussel consumers who are too afraid to even sample the product. Every food was perceived to carry a higher risk by the non-eaters of mussels than by respondents who had eaten mussels. This difference was significant for bluefish, salmon and lobster at the 95 percent significance level.

Figure 4
Mean Perceived Risk Ratings of the Sample Split by Whether or Not the Respondent Has Eaten Mussels.



Finally, the sample was split between those consumers who said that they would buy mussels (75 percent of the total sample) and those who said that they would never buy mussels (25 percent of the total sample). Again, consumers who would not buy mussels had significantly higher (at the 99 percent significance level) risk perceptions for mussels (Figure 5). Risk perceptions for all other foods except chicken and cod were significantly greater (at the 90 percent or better significance level) for non-buyers of mussels than for buyers of mussels.

The evidence of higher risk perceptions among non-consumers of mussels and non-buyers of mussels is made even more clear when one examines the ratio of the risk rating of mussels to the average risk rating of all eight foods combined.[2] A relative risk rating greater than 1 indicates that consumers perceive mussels to have a higher risk of getting sick than all of the foods averaged together. The mean relative risk rating of mussels of 1.58 by non-buyers of mussels is significantly greater at the 99 percent significance level than the mean relative risk rating of 1.27 by buyers of mussels (Figure 6). In addition, the mean relative risk rating of mussels of 1.45 by consumers who have never eaten mussels is greater than the mean relative risk rating of 1.31 by consumers who have eaten mussels, although this difference is only significant at the 75 percent significance level.

Figure 5
Mean Perceived Risk Ratings of Sample Split by Whether or Not the Respondent Would Buy Mussels.

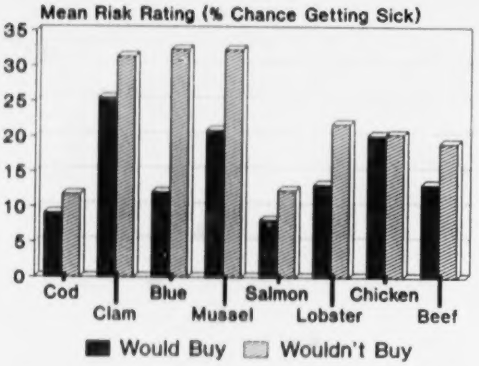
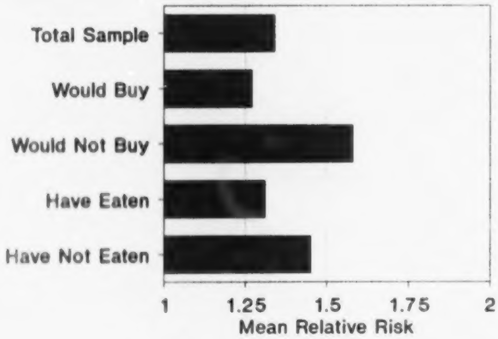


Figure 6
Mean Relative Perceived Risk of Eating Mussels.



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[2] RELRISK = Risk Rating (Mussels)/ Average(Risk Rating (Cod) + Risk Rating (Clams) + Risk Rating (Mussels) + Risk Rating (Bluefish) + Risk Rating (Lobster) + Risk Rating (Salmon) + Risk Rating (Chicken) + Risk Rating (Beef)).

Clearly there appears to be significant consumer risk perceptions associated with the consumption of mussels. Future research will focus on incorporating this risk perception into a demand model for mussels and testing for the impact of risk perceptions on demand.

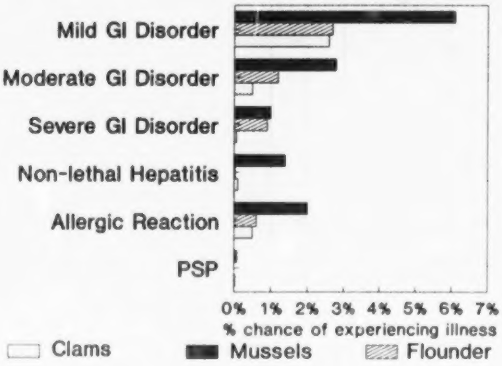
The Pilot Study

Given the strong evidence of risk perceptions associated with the consumption of mussels, a pilot study was conducted in October 1990 which focused specifically upon consumer risk perceptions and willingness to pay for seafood safety. The pilot study was conducted in conjunction with a Sea Grant study of consumer perspectives on seafood quality and safety and consisted of interviewing 55 consumers from Rhode Island.[3]

The survey focused solely on seafood safety perceptions and the consumer's willingness to pay for a reduction in the risk from eating seafood. Risk perceptions were elicited for a variety of illnesses including mild gastrointestinal (GI) disorder, moderate GI disorder, severe GI disorder, non-lethal hepatitis, permanent disability, cancer, allergic reactions, paralytic shellfish poisoning and death. Consumers were asked to estimate their risk of contracting the above illnesses from eating flounder, clams and mussels using a logarithmic scale. Consumers rated each illness as having a risk of 1, 1 in 2, 1 in 10, 1 in 100, 1 in 1000, 1 in 100,000, 1 in 1 million or 0. Risk estimates for each illness and each seafood were elicited. Flounder was chosen as a "control" species since there was thought to be little perceived risk associated with eating this marine finfish.

Preliminary analysis of the risk estimates indicate not only a substantial level of risk perceived in eating all three seafoods, but a higher risk associated with eating mussels compared to clams and flounder. Figure 7 illustrates results for the illnesses which elicited relatively high risk estimates including, all three GI disorders, nonlethal hepatitis, allergic reactions and PSP. The difference between the mean risk ratings of mussels and the mean risk ratings of clams and flounder were found to be significant at the 80 percent or higher significance level for mild and moderate GI disorders, non-lethal hepatitis, PSP, and allergic reactions.

Figure 7
Mean Risk Estimates of Experiencing Various Illness From Eating Mussels, Clams and Flounder.



In contrast to the above illnesses, consumers did not perceive as high a risk of a permanent disability, cancer or death, although the average risk estimates of these illnesses ranged from less than a 0.0001 percent chance of dying from eating flounder to a 0.004 percent chance of experiencing a permanent disability from eating mussels.

In terms of evaluating the absolute levels of these risk estimates, it is difficult to find comparable objective estimates of the risks associated with consuming these seafoods and contracting these illnesses. The consumer risk estimates for the GI disorders, non-lethal hepatitis, allergic reaction and PSP are likely to be higher than the true risk.

This information along with other survey data will be incorporated into a model estimating a consumer's willingness to pay for seafood safety.

Conclusion

Preliminary results from two surveys of consumers indicate that consumers perceive some risk in consuming seafood and that this risk is particularly high for consuming mussels. Since a consumer's perception of product attributes such as safety are incorporated into his or her purchase decisions, risk perceptions may have a significant impact on seafood demand. In the case of blue mussels, evidence suggests that consumers have a significantly higher risk perception associated with consuming mussels than with other seafood. One would expect this perception of risk to have a negative impact on the demand for mussels.

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[3] For more information on the pilot study see J.G. Anderson and M.T. Morissey (1991).

If consumer's risk perceptions are higher than the true risk, consumers are making purchase decisions with incorrect information. Mandatory seafood inspection could help reduce consumers' perceived risk from eating seafood, while consumer education could help eliminate consumer misconceptions about seafood safety. The result would be more informed purchase decisions and greater benefits to the consumer.

References

Anderson, J.G. & Morrissey, M.T. (1991) Rhode Island consumers' seafood consumption and perceptions of seafood quality. In V. Haldeman (Ed.), The Proceedings of the American Council on Consumer Interests 37th Annual conference.

Bean, Nancy H. & Griffin, Patricia M. (1990) Foodborne disease outbreaks in United States, 1973-1987: pathogens, vehicles and trends. Journal of Food Protection, 53(9), 804-817.

Blue Gold Mussel Farms. (1989) Personal communication.

Committee on the Evaluation of the Safety of Fishery Products. (1991) In F.E. Ahmed (Ed), Seafood Safety. Washington, D.C.: Food and Nutrition Board, Institute of Medicine, National Academy of Sciences.

De Franssu, Luc. (1990) The World Market for Bivalves. Rome: Food and Agriculture Organization of the United Nations.

Food and Drug Organization of the United Nations. (1990) Fishery Statistics: Catches and Landings, FAO Fisheries Series No. 34. Rome: FAO.

Seafood Business. (1988) Shellfish scare hits Atlantic Canada. Seafood Business, 7(1), 28-31.

United States Department of Commerce, National Marine Fisheries Service, Northeast Fisheries Center. (1991) Personal communication.

Urner Barry Publications, Inc. (1984-1990) Seafood Price-Current. Toms River, NJ: Urner Barry Publications, Inc.

Overview of an Expert Systems Laboratory

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The Family Resource Management Department at the Ohio State University received a grant from the Selective Excellence Program of the Ohio Board of Regents to establish an Expert Systems Laboratory for Family Resource Management. The laboratory has a fulltime programmer analyst and two graduate assistants, as well as undergraduate student programmers, working with faculty to develop computer software to help consumers and families.

Expert systems can be a superior tool for resource allocation decisions compared to printed materials, which can provide professionals and consumers with the information needed to make decisions but have limited potential for assisting in the actual process of decision making. In addition, the user of printed materials must be fairly literate and numerate, as well as motivated, in order to make appropriate use of the materials. The price of powerful microcomputers will continue to decrease in real terms. Within a few years, hardware available to consumers in their homes, in libraries, and in Cooperative Extension offices will have the potential of helping consumers with help with complex decisions, and in an understandable way. This potential is unlikely to be reached, as not very much development of sophisticated software to help consumers has taken place.

Useful expert systems are very expensive to develop. A typical human expert knows at least 50,000 rules. It may take a year or more to develop an expert system to duplicate part of a human expert's knowledge, and more time to implement and evaluate the system. While commercial development of software will fill some needs, it is unlikely to suffice in meeting personal, educational and research needs. As commercial software, by definition , must be purchased, it is likely to be developed for a higher income group -- for example, programs designed to assist in the management of stock portfolios. In addition, commercial programs are unlikely to be research based or to offer the possibility of modification as a result of research findings, nor will there likely be adequate scrutiny of the models, data, etc. used. There is thus a need for academic researchers to develop and evaluate expert systems software for consumers, and to increase funding for such research. It is possible for some types of expert systems and other computer software development to be consistent with academic reward structures (Hanna, 1991).

The **Family Resource Management Expert Systems Laboratory** will focus on software development which has one or more of the following characteristics:

A. The application fits into the academic programs of the department, such as family financial management, and can be used by students in the department.

B. There is a significant research component in the software development and testing, with theoretical models, empirical analysis for a database used in the program, and/or sophisticated statistical analysis for evaluation of the effectiveness of the software.

C. The software can be used by government and nonprofit agencies, such as the Cooperative Extension Service and credit counseling agencies.

The first major project of the Family Resource Management Expert Systems Laboratory is the "Life Cycle Savings Program." It is designed to help consumers plan for long range savings goals such as retirement. It has been tested with more than 100 undergraduate students.

References

Hanna, S. (1991) "Academic Participation in the Development of Expert Systems for Consumers," Proceedings of the Second International Conference on Research in the Consumer Interest.

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Research Opportunities in Expert Systems Development

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Development of expert systems or computer software programs to aid consumers in decision making can provide numerous opportunities for research. Research should be an integral part of the design and development plan of an expert systems development laboratory.

Good expert systems programs meet several constraints. They must be theory based, use accurate data for rule and constraint development, and take into account the decision making processes of users. In addition, users must perceive the outcome of the program to be correct or they will not accept or follow the advice.

If expert systems are to be theory based, developers must carefully survey previous literature and test new theories relevant to the domain or subject matter of the program. This research must be conducted prior to the development of the program. For example, a program attempting to aid retired consumers in allocating their investment portfolios might incorporate an asset allocation model. Because the asset allocation model was designed for corporate use and families do not have profit maximization as a goal, the model would need to be adapted for consumers. Individuals tend to be more risk averse than corporations, making perceptions of risk very important in the development of such an expert system. The economic, cognitive psychology and finance literature can provide a foundation for the research leading up to expert systems development for this application, but many of the theories and models would need to be adapted for use by individuals and families.

A second requirement for an expert system is to use correct and valid data and equations upon which calculations are based. Any assumptions entered as rules and constraints, or as the knowledge base on which the programs operate also need to be valid. For example, an expert system for retirement portfolio allocation would contain rules concerning the life expectancy of the retiree, because investment return rates would be lower given shorter time periods.

A third requirement for an expert system is to check user input for validity or at least plausibility. For instance, if the user if required to input inflation rates, incorrect estimates might lead to errors. One useful type of research related to expert systems is to analyze user assumptions about important parameters for input. In the design of expert systems, allowing for user input errors through use of reasonable default values or through consistency checking can lead to more valid output.

A fourth requirement of a good expert system is for the program to take into account the perceptions and cognitive processes of the users. This may be a promising area of research. There are no previous studies concerning the level of belief or trust users have in the decisions made by expert systems. Expert systems are used in many arenas by professionals for diagnostic and prescriptive decisions. These systems create two levels of "users" -- the professional and the end consumer. For example, if an expert system is used by a doctor to diagnose diseases, the doctor must believe that diagnosis, and the patient must believe the doctor. However, it is unlikely that the patient knows that a computer is doing the diagnosis.

A fifth requirement of a good expert system is that it must take into account the decision making process of the user. For applications with true human experts, study of the decision making process of an expert will help in expert system development. The expert's knowledge base and inference mechanisms can be shared by thousands of consumers or paraprofessionals. Research could be conducted based on observation of expert decision making, and also comparing the decision making processes of experts and ordinary consumers.

Developing expert systems provides opportunities for researchers to consider new ways to apply theories, lead to new interdisciplinary approaches, and gain more understanding of consumer decision making processes. Thus, research related to expert systems may contribute to theory development and also help consumers.

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Challenges in Computer Program Development

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Establishing a framework for computer program development provides structure and organization by furnishing a set of steps that are consistently followed in each project. The steps involved are; the proposal, approval, team formation, pre-program documentation, program model, program code development, program testing, documentation, and support and training.

Initially someone has an idea or problem, and says, "Couldn't we use the computer to....". They begin by writing a proposal of how the problem could be addressed, including a statement of the problem, the objective and scope of the problem, the intended users and how the problem affects them. Reviewing past attempts at dealing with this problem can provide additional insights.

Determining what type of computer program is needed to address the problem is part of this component. Not all problems can be answered by computers, no matter now much we would like to believe they can. A spreadsheet template may handle the situation or a memory-resident program may be able to do a task. Software may already exist that gives a solution to the problem.

After having defined the problem and examined possible tools for solving it, there will have to be a decision on whether the problem is "worth fixing". At some point, it is not worth spending the time, energy and money needed to fix every problem. When deciding whether to approve a project, consideration will need to be given to the resources available both to the developer and the end-user or intended audience.

Team formation will occur after the project is approved. Some combination of the following team members will be needed; a subject matter specialist or expert, a project manager or knowledge engineer, a programmer, reviewers (two people from the intended audience), and an editor. The relationship between the team members will vary from one project to the next.

The overall design of the program is planned on paper before actual construction of the program begins. Pre-program documentation entails identifying each major component, its overall purpose, and the logical relationships among the components. This can be done using both textual information and in the form of a flow chart.

Next the programmer creates a program model with sample screens demonstrating all major options. Discussion of screen responses and data output enables the team to evaluate the appearance and functionality of the program. After review by the development team, actual programming can begin.

There are three components to program development. The first component is to construct the program itself, the inputs, variables, and formulas. Next, provide the environment within which the program runs. Of major importance is designing how the program interacts with the user, between 80 to 95 percent of programming time can be spent on this component. Each of these areas can be written and tested separately and then incorporated into the total program.

Documentation in the form of a user's guide and technical documentation are crucial for proper software development. This should be an on-going part of the project and not a last minute addition to it. Testing and evaluation of the program is also critical in software development. It is important to let many different people use the program during its development to find problems with "readability" or understanding what to input.

The job is not finished after developing and releasing a computer program. There is a need to train users in operating the program and for support of users. There will be questions concerning the operation of the program. Some of the questions will prompt changes to be incorporated into updated versions; other questions will need to be answered to clarify what is needed to run the program.

Software development can be a frantic experience or have a rhythmic flow. Establishing a routine for development will give the best results. By following the prescribed steps it can be achieved with the desired results.

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Reflections on Testing and Evaluation of Expert Systems Software

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Evaluation and testing of Expert Systems software should be a continuous process beginning with a feasibility study, continuing through prototype development and documentation review, and culminating in a pilot study. A research project could be designed to measure the effects of the program itself, compare the use of computer software to other methods or to analyze psychological effects of the computer program.

Although there are many approaches to a feasibility study, broadly contrasting types include an issue-oriented study and a weighted category study. The issue-oriented study (Walters and Nielsen, 1988) analyzes economic, cultural, and technical issues. Economic issues include an estimation of benefits, costs, and risks. Should the development group be a pioneer? The risk of producing a knowledge-based system is higher than the risk associated with an algorithm-based application. Cultural issues include time and expense constraints and the users' wants and needs. Technical issues include suitability of the problem, the existence of expertise, and available technology. If an algorithmic solution to the problem already exists, then there may be no reason to develop an Expert Systems program.

Beckman (1991) defined specific categories and awarded points to each category as follows: task (25), payoff (20), customer management (20), system designer (15), domain expert (10), and user (10). To be considered an application must score 50 percent overall and task and payoff should each score over 50 percent. A reasonable time frame in which to accomplish a feasibility study would be 1 to 4 weeks. Management, expert, developers, and prospective users should form a team to prepare the feasibility study.

During prototype development, content testing and user testing, deserve equal consideration (Pedersen, 1989). Content testing involves the developer, the expert, and the user. Since small units can be programmed, each should be tested as it is developed. The program content must be correct and designated cases must be solvable. A data base of common cases should be developed that can be tested against each module of the program.

User testing is just as essential and should be started as soon as possible. It is important to capture the real-world cases the final user sees as important. Users will quickly find erroneous recommendations. The program requirements and the users' skill level must match. A readability check on program statements may indicate that active verbs and short direct statements are needed.

Two instruments which could be used to evaluate documentation are a cloze test and a usability test. In a cloze test, every 5th or 7th word is eliminated from a 300 word passage and users are asked to provide the missing words. During a usability test, volunteers are given a portion of the User Guide such as the installation or operation and asked to proceed with no assistance.

Primary and secondary test groups could be colleagues, students or clients. Attitude surveys could help determine comprehension and positive affect of the program. An External Advisory Committee consisting of experts from related career fields could help identify factors not considered by the development team. A maintenance plan should be developed so that users will not be involved with outdated software. As the prototype stage is drawing to a close, a pilot study should be designed to measure the program's effectiveness.

References

Beckman, Thomas J. (1991). Selecting Expert-Systems Applications, AI Expert, Feb. 42-48.
Pedersen, Ken. (1989). Expert Systems Programming. New York: John Wiley & Sons, Inc.
Walters, John R. and Nielsen, Norman R. (1988). Crafting Knowledge-Based Systems. New York: John Wiley & Sons, Inc.

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Confidence Swindles of Older Consumers: The Crimes and Their Particulars as Seen by Bunco Investigators in Local Police Departments

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Consumer fraud is the most commonly committed crime against the elderly and one type of consumer fraud, confidence games and swindles, is more frequently directed at older citizens than any other. This paper reports the principal findings of a national survey focusing on such crimes and their effects on older consumers. The respondents are bunco investigators representing 331 local police departments in 39 states. The survey findings reveal particulars for the three most commonly employed confidence swindles targeting elders.

Consumer fraud is the most commonly committed crime against the elderly and one type of consumer fraud, confidence games and swindles, is more frequently directed at older citizens than any other. Yet despite the prevalence of this crime there is a lack of reliable information available about how it is practiced today in communities across the nation. The present study attempts to close this gap by surveying bunco investigators in local police departments in an effort to secure an understanding of the most common types of confidence swindles targeting older consumers. We start with a brief review of the existing literature, continue with a description of the study's procedures and results, and end with a discussion of the findings and their implications.

Literature Review

Consumer fraud is viewed by some scholars as a mixed category of criminal offenses which includes confidence games and swindles as a subcategory. Other subcategories, according to Elmore (1981), include health and medical frauds; general merchandising frauds; mail-order frauds; income creation, protection and investment frauds; and social psychological frauds. As Blum (1972) has noted, the confidence swindle often differs from other forms of consumer fraud in that its perpetrators usually provide no consumer product or service in exchange for the victim's money, while perpetrators of other consumer frauds may deliver goods, but not the ones ordered, or at a much higher price than that expected to be paid by the buyer.

Although Alston (1986) reports that there is little reliable information on the characteristics of victims of confidence games, the experience of the American Association for Retired Persons (AARP), and of law enforcement agencies, is that the older person is often the chief target of the confidence swindler.

One reason that it has been difficult to combat confidence swindling of the elderly is that there is not one but many types of such swindles. If there were only one type, law enforcement officers and consumer educators could focus their efforts on identifying a single set or pattern of circumstances which is likely to precipitate a confidence swindle. However, with many types the problem is substantially more difficult.

For law enforcement officers and consumer educators to deal effectively with confidence swindles directed against the elderly, it is necessary to start with a specification of the particulars of the most common types of swindles now being perpetrated on this age group. For each type one needs to know the characteristics of the perpetrators of the swindles as well as their victims; the specific behaviors of swindlers and victims; the objective circumstances under which the swindles occur (physical setting, time of day, day of week and month, season of the year, etc.); and the consequences of the swindles (e.g., financial losses to victims).

Procedure

While detailed timely information is needed for common types of confidence swindles, it is not clear how one goes about securing this information. Three primary sources are available to the researcher: the confidence swindlers, their victims, and the law enforcement officers who investigate confidence swindles. Examination of these three primary sources of information on confidence swindles currently practiced in American communities, leads one to conclude that local police who specialize in investigating such swindles are by far the most reliable; and this being the case, they appeared to be the appropriate respondent group for our survey research study. Access to this population has been recently facilitated by the establishment of the National Association of Bunco Investigators (NABI) in 1984. The organization now lists over 500 law enforcement officers in city and county police departments in the United States and it is this group which served as the target population for this research study.

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[1] Professor of Psychology. This research was supported by a grant from the AARP Andrus Foundation.

Although the target population is not representative of the United States as a whole the biases which exist appear to be in the direction of larger communities (23 of the 25 largest American cities are represented) and communities experiencing relatively high incidences of confidence swindles. The total NABI membership of local police officers to be surveyed represents 39 of the 50 states as well as the District of Columbia. (Excluded are many relatively low population states such as Alaska, Hawaii, Idaho, Iowa, Montana, Nevada, South Dakota, Utah, and Wyoming.) The total population served by the local police departments to be surveyed is slightly more than 60 million, or about a fourth of the U.S. population of 250 million. Prominently represented in the target population are states like California and Florida with large numbers of older residents.

A mail survey was carried out in several steps. First an introductory letter was sent to all NABI members in February 1990 describing the survey to be conducted in June 1990. The letter also asked NABI members to indicate the five most common types of confidence swindles affecting older consumers in the local area of jurisdiction for each respondent's department.

Three types of confidence swindles dominated the respondent's selections (the Pigeon Drop swindle, the Bank Examiner swindle, and Home Improvement/Repair swindles). These were the only ones checked by more than half of the respondents so it was decided to concentrate the mail survey study on these crimes.

The mail survey was constructed to secure information on these three crimes from NABI members employed at 391 local police departments. The questionnaire was pretested by NABI members and reviewed by a project advisory committee consisting of NABI officials as well as representatives of consumer and elder organizations with an interest in using the project findings for educational purposes. The pretest revealed that many of the target respondents did not have detailed records on confidence swindles available in their department files. This meant that survey questions could not be too fine-grained in character or responses would not be forthcoming.

The mail survey form was prepared using Dillman's Total Design Method (1978) as a guide. A 16-page form was mailed to the 391 NABI respondents in June 1990. Telephone calls and two additional follow-up mailings of the survey form were employed to encourage a high response rate. The result was an 85 percent response rate (331 returns from 39 states). Finally, it should be noted that 33 of the 331 were surveyed by mail a second time in an effort to secure information regarding the reliability of the questionnaire responses.

Results

Before examining the substantive results of the survey, we look at the findings for the 33 respondents who were tested twice in an effort to determine the reliability of the survey questions. A total of 97 multiple-choice opinion questions on confidence swindles was asked in the survey. For each of these questions a determination was made of the percentage of respondents answering in the same way for both survey administrations. The results were encouraging in that a mean value of 81 percent was found for the 97 questions, and statistical analysis revealed that 96 of the 97 percentage values were significantly above chance expectations.

Several propositions suggested by the survey findings are as follows:

1. Elder victims of confidence swindles, are more likely to be female rather than male, young-old rather than old-old, White rather than non-White, not married rather than married, and not employed outside the home as compared to employed outside the home.

2. Elders with certain characteristics are likely to attract confidence swindlers looking for victims. Particularly prominent among these characteristics are friendliness to strangers and visible signs of financial assets on one's person. Also prominent for Home Improvement/Repair swindles are

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apparent problems with vision, hearing, or mobility.

3. Swindler teams committing crimes against elders are likely to contain more than one member, with two being the most common size. Teams are likely to consist of all younger members (under age 50), although many teams are believed to include members both under and over age 50. Teams with all-White members and all-male members are likely to be found for Bank Examiner and Home Improvement/Repair swindles, while mixed teams, with White and non-White members as well as male and female members, are likely to be found for Pigeon Drop swindles.

4. The tactical approach taken by confidence swindlers who target elders can be expected to vary by type of swindle with a "soft approach" likely for Pigeon Drop and Bank Examiner swindles and a combined ("soft" and "hard") approach likely for Home Improvement/Repair swindles. Also varying by type of swindle is place of initial contact, with stores and shopping malls being likely for Pigeon Drop swindles, and the victim's home being likely for Bank Examiner and Home Improvement/Repair swindles. All three swindles are likely to occur in the morning or afternoon, rather than the evening; on weekdays rather than weekends; and in the spring or summer, rather than the fall or winter.

5. Home Improvement/Repair swindles of older consumers are likely to occur in middle-class neighborhoods, and a driveway or roofing problem is a likely focus of these swindles.

6. Confidence swindles of elder consumers often result in substantial financial losses for their victims with $1,000 to $5,000 being likely for Pigeon Drop, Bank Examiner, and Home Improvement/Repair swindles. Moreover, few reported cases of these three types of swindles are solved, with "suspended or inactive" as a likely outcome for these cases.

7. It appears likely that confidence swindles of elders have increased in number or stayed the same over the past five years, and it also seems likely (assuming the reasonableness of the respondents' predictions), that more problems of this sort will be experienced by elders in the next ten years. Over the past five years, it appears likely too that there have been changes in the relative frequency of the three types of confidence swindles most commonly affecting elders, with Bank Examiner swindles having experienced the most favorable change (smallest increase or largest decrease) and Home Improvement/Repair swindles the least favorable change (largest increase or smallest decrease).

Discussion

If these seven groups of statements tell us what is suggested by expert opinion on confidence swindles affecting older citizens, what, one may ask, are their implications for public policy? In particular, what can one learn from what the study has revealed (or not revealed) which will help alleviate the problem? Several observations seem in order here. First, as an initial research effort addressing a very large and complex problem area, the study has probably raised more questions than it has answered. More research is needed to secure reliable and valid information on confidence swindles affecting elders, and such research should address a larger number of confidence swindle types than the three dealt with herein. Particularly important with regard to the latter point is the inclusion of regionally common swindles such as the Jamaican Switch and Latin Charity swindles frequently practiced in areas with large Hispanic populations.

Second, before the needed research can be performed, it may well be necessary to establish a nationwide recordkeeping system which will note the incidence and particulars of confidence swindles on an ongoing basis for the country as a whole. Such a system would permit future research and public policy decisions to be based on filed reports of confidence swindles with local, state, and federal law enforcement agencies, and this would constitute a big improvement over the expert opinion drawn upon in the present study. The results of the present study indicate that the respondents strongly favor the establishment of such a system, with many noting their willingness to work on its development and implementation.

A third observation deals with the need to improve current practices used to prevent confidence swindles of elders. Although not specifically addressed in this study, many respondents made a point of stressing the importance of devoting more resources to the education of elders. Also important is doing more to train law enforcement personnel to recognize and effectively deal with confidence swindles, and to sensitize bank officials to the need to work cooperatively with police departments to prevent older consumers from being duped into withdrawing large sums of cash which end up in the hands of swindlers. The present study offers much useful information to guide such preventive efforts. While the study is no substitute for a nationwide reporting system which would provide timely and objective information on an ongoing basis, its results may represent the best source of information currently available for such preventive purposes.

A final observation considers the matter of unreported swindles. While this seems likely to constitute a major problem for the forseeable future, educational efforts aimed at elders and at law enforcement officials may help to reduce its magnitude. While elders need to know more about confidence swindles and how to avoid them, they also need to know that once they are victimized by swindles, they have a responsibility to report the particulars to the police. Moreover, once such reports are made to the police, it is important that the officers contacted recognize their seriousness and take appropriate action.

REFERENCES

Alston, L.A. (1986) Crime and older Americans. Springfield: Charles C. Thomas.

Blum, R.H. (1972) Deceivers and deceived: Observations on confidence men and their victims, informants and their quarry, political and industrial spies and ordinary citizens. Springfield: Charles C. Thomas.

Dillman, D.A. (1978) Mail and telephone surveys: The total design method. New York: Wiley.

Elmore, E. (1981) Consumer fraud and the elderly. In D. Lester (ed.), The elderly victim of crime (pp. 27-44). Springfield: Charles C. Thomas.

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Deregulation, Market Concentration, and the Demand for Air Travel

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An analysis of travel to 19 destination airports indicates that in 1983 and 1987 round-trip coach airfares did not increase in response to higher industry concentration. In addition, the demand for air travel became more price elastic in this time period, insulating consumers from large swings in consumer welfare gains or losses.

From the onset, airline deregulation has been associated with declines in in-flight service, baggage handling, and on-time arrival performance (Dempsey, 1990; Moore, 1986; Trapani and Olson, 1982). Most recently, reports of growing market concentration, both within various market segments and across the airline market as a whole, have been used as evidence of deregulation-induced troubles (Mead, 1989; McGinley, 1991). Some policy makers, alarmed at the rising concentration figures, are even going so far as to propose that regulatory measures be re-introduced into the airline market (McGinley 1989; Nomani and Barrett, 1990).

Yet observing a change in market concentration should not automatically lead to the conclusion that airline deregulation has failed. A decline in the number of carriers nationally may not translate into a decline in the number of carriers competing for a specific route. If the competition on specific routes remains higher than in the regulatory era (i.e., more than two carriers on a route) despite a decline in the number of airlines, then it may be incorrect to conclude that deregulation has failed. However, if route specific competition drops off, then one must examine how this decline affects the fares charged and the demand for air travel. Only then can one begin to assess whether rising market concentration means that deregulation has jeopardized consumers' welfare in this market.

The relationships between national concentration trends, local market concentration levels, airfares, and number of airline trips are estimated at two different points in time in this paper. The first set of estimates is based on data from 1983, a time when many new carriers were entering the interstate airline market. The second set of estimates is based on data from 1987, a time when the increase in overall market concentration was becoming evident. Indeed, by 1987, nine of the seventeen post-deregulation market entrants had failed and four of the remaining eight had been acquired by other airlines (Congressional Budget Office, 1988). The comparative estimates provide insights into the extent to which rising overall market concentration can be used as an indicator of deregulatory troubles.

Literature Review

Some scholars (Baumol, Panzar, and Willig, 1982; Kahn, 1988; Morrison and Winston, 1989) argue that although the airline market is not (and has never been) characterized by a large number of firms, competitive fares may prevail because the market is generally contestable. That is, information is readily available, no (or few) barriers to entry or exit exist, and economies of scale are not present in this market. As a result, the threat of entry leads firms to price fares at a competitive level despite the fact that the actual number of carriers is quite small.

Others (Borenstein, 1989; Fawcett and Farris, 1989) argue that while the deregulated airline market may have initially been contestable, over time the major airlines have developed effective entry barriers. These barriers include control of gates at congested airports, frequent flyer programs, and computerized reservation systems. With such barriers in place, airlines in relatively concentrated markets can raise fares above competitive levels with little threat of new airlines entering the market to capitalize on the excess profits.

If the airline market is

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contestable, then market concentration levels should have little or no relationship to fares. Alternatively, if the market is not contestable, then as the concentration level increases or decreases so should fares.

Evidence on the relationship between market concentration and fares is mixed. Aggregate trend analyses generally reveal that both the number of carriers and the average fare charged have shown downward trends since 1984 (Congressional Budget Office, 1988; Ogur, Wagner, and Vita, 1988; Schwieterman, 1985). One exception in these aggregate time-series analyses is the work of Dempsey (1990) who, using national data on fuel-adjusted airfares, reports that fares have risen as the industry has become more concentrated.

In contrast to research based on aggregate data, studies using origin or destination specific measures of concentration generally note a positive relationship between concentration and yield (i.e., the fare paid per mile traveled)(Department of Transportation, 1990; Mead, 1989; Morrison and Winston, 1990). An exception is Borenstein's 1989; 1990; 1991) work whose findings are mixed. For example, in his examination of dominant firm advantage (1991) he finds that in 1986, average price is not significantly related to a carrier's market share at the origin airport, but the degree of origin airport dominance is positively related to route shares.

It would appear that while there is some consensus regarding the decline in the hypothetical contestability of the airline market, there is little consensus about the relationship between market concentration and airfares. In part, the equivocal results across studies may be a function of operational differences in the measurement of market concentration and prices. In some studies (e.g., Congressional Budget Office, 1988) market concentration is tracked at the national level while in other studies (e.g., Borenstein, 1989) it is measured at an origin and/or destination-specific level. There is also substantial variation with respect to how fares are measured across these studies. In addition, although most of the studies make use of the Department of Transportation's Data Bank 1A in their empirical work, differences in sampling restrictions may also play a role in explaining the range of results.

While the studies vary in their sampling and measurement choices, they are consistent in their use of airfares as the outcome measure of interest. Yet, from the consumer's perspective, an assessment of deregulation's impact does not stop there. For consumers, the consequences of rising prices depend on the price elasticity of demand. To date, only two studies have estimated price elasticities of demand for airline travel. Morrison and Winston (1986) use a discrete travel mode choice model to estimate cost elasticities for air travel in 1977. They find that both business and pleasure travel are price inelastic, with business travel being more price inelastic than pleasure travel. In contrast, Joesch and Zick (1991) estimate the price elasticities of demand for round-trip coach air travel to various cities and find that demand is generally price elastic and that it is becoming more so over time.

In sum, while the rhetoric regarding possible re-regulation of the airline industry continues to grow, the empirical evidence regarding the need for re-regulation is generally inconclusive. In this paper we will address two policy relevant questions. First, what role does market concentration play in the setting of airline fares? And second, does the price elasticity of demand for airline travel vary by concentration level?

The Model

Most estimated airline price equations are implicitly based on a profit maximization framework. In these formulations, airfares tend to be posited as a function of miles traveled (Morrison and Winston, 1986; 1989), fuel and labor costs (Dempsey, 1990; Morrison and Winston, 1986), flight frequency (Borenstein, 1989; Morrison and Winston, 1986), and/or number of flight segments (Borenstein, 1989). Market concentration effects are tested by adding one or more concentration measures to the set of regressors.

We begin with a simple model of an oligopolistic market for air travel. To the extent that most people derive utility from getting to a particular destination and not from flying per se, air transportation is an intermediate good. Taking a trip to destination A is consequently a different good than taking a trip to destination B, regardless of the trip origin. As a result, there are as many different markets for air travel as there are destinations.

In each of these oligopolistic markets, it is assumed that all firms face the same cost and production constraints and that collusion is possible. The firms identify the quantity that would maximize profits and set the price at a level that will generate the profit maximizing quantity. The profit maximizing quantity is thus a function of cost and production constraints and the market demand curve. As a result, quantity and price are simultaneously determined.

Past analyses have generally not controlled for quantity in the estimated price equations--the one exception is Borenstein (1989). If the airline market is an oligopoly where firms can set the price based, in part, on information from the demand curve, then previous price analyses that have neglected to control for quantity suffer from omitted variable bias.

In this formulation, careful attention must be given to the context in which concentration is hypothesized to matter. Specifically, does a decline in the number of domestic airlines portend that fares should rise? Or must route-specific concentration increase before fares go up? If a decline in market contestability comes about because of the implementation of origin- or destination-specific barriers, then it may be origin- or destination-specific concentration that matters. However, if the barriers are industry-wide, then the appropriate measure may be overall market concentration. To allow for both possibilities, multiple measures of concentration will be included in the estimation that follows.

The Data

The specification of the empirical price and demand equations is constrained by the availability of data. The primary source of data for the following estimates is the Department of Transportation's third quarter Data Bank 1A for 1983 and 1987 (U.S. Department of Transportation, 1987). Data Bank 1A provides information on the number of round trips taken from different airports, the cost and length of these trips, and the number of trip segments traveled for a ten percent random sample of all commercial airplane trips originating in the United States. Data from the third quarter 1983 are chosen to represent a time when the number of national carriers was increasing. Conversely, the third quarter 1987 reflects a time when many of the national carriers were merging with other carriers or were leaving the industry altogether. Flights to destinations located outside the continental United States, one-way trips and first-class trips within the U.S. are excluded from the analysis done here. In addition, all trips of less than 300 miles one way are eliminated because they are likely to have viable transportation substitutes (e.g., train, bus, car) that we cannot control for in our analyses.

Information on income and preference shifters has to be matched to Data Bank 1A origin city data. These data are obtained from the Bureau of the Census' 1985 County and City Data Book (U.S. Department of Commerce, 1986). For the purpose of this analysis, an origin area is defined as a fifty mile radius around the airport at which a round-trip started.

The Empirical Model

Price and demand equations are estimated for 19 different destination airports to investigate whether concentration and price elasticity effects vary across airport type. The 19 destination airports are selected to maximize comparability with previous studies and to represent long-standing hubs, relatively new hubs and non-hubs. Long-standing hubs are defined as airports where one or more airlines had a hub by 1979, while new hubs are airports where one or more airlines set up hub operations between 1979 and 1983.

For each of the 19 price equations, the price of a plane trip is measured by the average round-trip coach airfare paid from origin city *i* to destination airport *j*. Recall that the average fare charged (p_{ij}) is posited to be a function of input cost factors, production inputs, concentration factors, and number of trips. We assume that in the cross-section input cost factors (e.g., fuel prices, labor costs) are constant across all origin-destination pairs and hence, do not include them in the estimating equations.

Production factors are captured by the average number of trip segments (S_{ij}) and trip length (D_{ij}). As segments and trip length increase, a greater amount of travel is produced which implies that segments and trip length are positively related to airfare, *ceteris paribus*. Effects of concentration on airfares are addressed with two different measures. The first, less traditional measure, is a dummy variable that takes on a value of "1" if there is another commercial airport within the origin city area, "0" otherwise (M_{ij}). The presence of another airport in the area is hypothesized to reduce the effective concentration in the origin market and thus decrease fares, *ceteris paribus*. The second, more traditional measure, is the Herfindahl-Hirschman Index (HHI_i) calculated for all tickets originating at airport i, regardless of the domestic destination. If there are origin-specific barriers to entry then an increase in the HHI should lead to an increase in the average fare, ceteris paribus.

The quantity of airline trips is measured by the number of round trip coach tickets purchased to a particular destination from an originating airport at least 300 miles away. (Limited numbers of observations prohibited the estimation of the markets for one-way travel, or first-class travel). If the oligopolists face a downward sloping market demand curve, then lower airfares should be associated with a larger number of airline trips, holding other factors in the equation constant.

The empirical market demand equation specifies the number of round trip coach tickets from origin airport i to destination airport j as a function of the average ticket price, income, and the number of people over 25 years of age in the origin airport area. Economic theory predicts that the number of plane trips taken will decrease if ticket prices increase, holding other factors constant. Here, ticket price will be measured by the average round-trip fare described earlier.

In the system outlined above, both the market demand and airfare equations are overidentified. As a result, two-stage least squares is used to estimate each equation. This approach is selected because it is tractable and because it results in consistent estimates of the coefficients. The one disadvantage of using two-stage least squares is that the estimator does not incorporate the possible correlation of the disturbance terms across the equations and hence is not asymptotically efficient (Kmenta, 1986).

The Empirical Results

Descriptive information on destination and origin airport concentration levels, number of origin airports, and mean airfares in both years are shown in Table 1. The descriptive information indicates that concentration levels rose somewhat between 1983 and 1987 for four out of the five long-standing hub airports. However, the pattern of concentration change was much more mixed for new hubs and non-hub airports. Regardless of hub classification, between 1983 and 1987 real airfares fell and the average number of round-trip tickets and the number of origin airports in Data Bank 1A increased. These findings are consistent with reports from the Department of Transportation (1990). The Price Equations. Estimates of the price equations for each year are presented in Tables 2 and 3. The estimates indicate that there was little change in pricing for these 19 markets between 1983 and 1987. In both years the estimated coefficients associated with the HHI, the multiple airport dummy, and the quantity of tickets are statistically insignificant in the vast majority of cases. The two

Table 1.
Descriptive Information

	Herfindahl-Hirschman Index Destination Airport		Herfindahl-Hirschman Index Mean for All Origin Airports		Mean Air Fares[a]		Mean Number of Round-Trip Tickets From Each Origin Airport		Number of Origin Airports	
Destination Airport	1983	1987	1983	1987	1983	1987	1983	1987	1983	1987
Long-Standing Hubs										
Chicago-O'Hare IL	.194	.223	.630	.578	373	320	256	295	266	318
Minn/St.Paul MN	.329	.475	.583	.546	395	315	106	132	240	299
Denver CO	.273	.317	.615	.568	374	296	131	184	264	311
Dallas/Ft.Worth TX	.387	.315	610	.546	406	315	154	210	261	294
Atlanta GA	.467	.485	.594	.538	388	317	142	210	248	286
New Hubs										
Detroit MI	.135	.218	.593	.543	354	281	108	150	243	295
Washington DC-Dulles	.282	.180	.473	.455	435	292	42	56	92	219
Cleveland OH	.258	.139	.553	.521	367	287	69	79	208	271
Charleston WV	.609	.416	.431	.394	373	332	13	12	104	152
Salt Lake City UT	.329	.318	.562	.482	439	348	52	80	218	238
Charlotte NC	.344	.494	.537	.470	387	324	41	73	197	220
Non-Hubs										
Omaha NE	.237	.148	.530	.480	371	306	26	38	202	224
Sacramento CA	.189	.234	.518	.446	456	359	31	53	184	207
Fargo ND	.407	.549	.400	.371	438	312	11	14	114	140
Jackson MS	.794	.536	.413	.368	432	353	20	24	124	144
Rochester MN	.430	.726	.427	.334	415	329	8	8	135	125
Wausau/Central WI	1.00	.531	.317	.312	420	378	6	7	78	103
Durango CO	.983	.471	.354	.287	413	373	5	10	64	85
Jacksonville NC	1.00	1.00	.381	.311	346	267	4	7	80	90

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[a] All air fares are expressed in 1987 dollars.

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exceptions for both years are the equations for Chicago's O'Hare and Atlanta's Hartsfield Airports.

In virtually all of the price equations the primary determinants of the fare charged appear to be distance traveled and number of flight segments. In both years airfares to all of the 19 airports increase with distance traveled, but typically at a declining rate. In addition, as the number of

Table 2.
Two-Stage Least Squares Parameter Estimates of the 1983 Price Equation[a]

Destination Airport	Constant	HHI	M	D	D²	S	ln(Q)
	Coefficients						
Long-Standing Hubs							
Chicago-O'Hare IL	3.82^{**}	0.32^{*}	-0.12^{**}	0.001^{**}	$-3.95x10^{-7**}$	0.20^{**}	0.11^{*}
Minn/St.Paul MN	4.07^{**}	0.21	-0.08	0.002^{**}	$-6.88x10^{-7**}$	0.17^{**}	0.07
Denver CO	4.75^{**}	0.13	0.002	0.001^{**}	$-4.45X10^{-7**}$	0.035	0.02
Dallas/Ft.Worth TX	3.42^{**}	0.38	0.049	0.002^{**}	$-8.03X10^{-7**}$	0.16^{*}	0.09
Atlanta GA	2.89^{**}	0.73^{**}	-0.003	0.001^{**}	$-2.98X10^{-7**}$	0.33^{**}	0.24^{**}
New Hubs							
Detroit MI	4.46^{**}	0.23	0.02	0.001^{**}	$-3.34X10^{-7**}$	0.12	0.05
Washington DC-Dulles	5.40^{**}	0.17	0.02	0.001^{**}	$-1.94X10^{-7**}$	-0.07	-0.08
Cleveland OH	5.54^{**}	-0.08	-0.013	0.001^{**}	$-3.12X10^{-7**}$	-0.04	-0.08
Charleston WVA	4.63^{**}	-0.002	-0.07	0.001^{**}	$-3.29X10^{-7**}$	0.80	0.05
Salt Lake City UT	4.82^{**}	0.06	-0.008	$6.9X10^{-4**}$	$-1.49X10^{-7**}$	0.11^{**}	0.04
Charlotte NC	1.23	1.49^{*}	-0.17	0.001^{**}	$-3.69X10^{-7**}$	0.51^{**}	0.51^{*}
Non-Hubs							
Omaha NE	5.04^{**}	-0.35	0.13	0.002^{**}	$-1.02X10^{-6**}$	0.04	-0.15
Sacramento CA	4.18^{**}	0.35^{**}	-0.03	0.001^{**}	$-3.03X10^{-7**}$	0.06^{*}	0.06
Fargo ND	4.41^{**}	0.12	0.003	0.002^{**}	$-7.13X10^{-7**}$	0.10^{*}	0.02
Jackson MS	3.14^{**}	0.88	-0.20	0.001^{**}	$-3.57X10^{-7**}$	0.31^{**}	0.27
Rochester MN	5.54^{**}	-0.10	0.03	0.002^{**}	$-6.09X10^{-7**}$	-0.10	-0.16
Wausau/Central WI	3.06^{**}	0.04	-0.35	0.002^{**}	$-9.74X10^{-7**}$	0.38^{**}	0.39
Durango CO	2.94^{**}	0.50^{*}	-0.09	0.002^{**}	$-5.39X10^{-7**}$	0.22^{**}	0.38^{*}
Jacksonville NC	5.78^{**}	-0.30	0.21	0.002^{**}	-4.[illegible]6$X10^{-7**}$	-0.19^{**}	-0.45^{**}

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* statistically significant at <.10
** statistically significant at <.05
[a] The dependent variable is the log of the average coach fare. Adjusted R^2s range from .46 to .74. The overall F-statistic is significant in all of the equations with a range of 7.3 to 128.0.

Table 3.
Two-Stage Least Squares Parameter Estimates of the 1987 Price Equation[a]

Destination Airport	Constant	HHI	M	D	D²	S	ln(Q)
	Coefficients						
Long-Standing Hubs							
Chicago-O'Hare IL	4.59^{**}	0.58^{**}	-0.16^{**}	$1.92x10^{-4}$	$1.04x10^{-8}$	0.08	0.11^{*}
Minn/St.Paul MN	5.05^{**}	0.004	0.08	$7.26x10^{-4**}$	$3.28x10^{-7**}$	0.09	$-6.00x10^{-4}$
Denver CO	4.74^{**}	0.20	0.02	$3.01x10^{-4}$	-[illegible]$.80x10^{-8}$	0.11	0.04
Dallas/Ft.Worth TX	4.28^{**}	0.05	0.08	0.002^{**}	$-6.47x10^{-7**}$	0.04	0.008
Atlanta GA	3.99^{**}	0.52^{*}	-0.46	$6.32x10^{-4**}$	$-1.37x10^{-7**}$	0.17^{**}	0.12^{**}
New Hubs							
Detroit MI	5.86^{**}	-0.35	0.03	$6.86x10^{-4**}$	$-2.02x10^{-7**}$	-0.04	-0.11^{*}
Washington DC-Dulles	5.58^{**}	-0.39	0.11	0.001^{**}	$-2.73x10^{-7**}$	-0.075	-0.16^{*}
Cleveland OH	6.08^{**}	-0.18	0.05	$5.27x10^{-4**}$	$-1.13x10^{-7**}$	-0.12	-0.11
Charleston WVA	5.19^{**}	-0.05	0.11	0.001^{**}	$-2.69x10^{-7**}$	0.02	-0.10
Salt Lake City UT	4.98^{**}	0.12	0.04	$3.43x10^{-4*}$	$-2.95x10^{-8}$	0.08	0.01
Charlotte NC	6.50^{**}	-0.85	0.26	0.001^{**}	$-3.20x10^{-7**}$	-0.09	-0.26
Non-Hubs							
Omaha NE	4.81^{**}	-0.04	0.11	$9.55x10^{-4**}$	$-4.92x10^{-7**}$	0.14^{**}	-0.04
Sacramento CA	4.61^{**}	0.28	-0.01	$3.75x10^{-4**}$	$-4.76x10^{-8}$	0.13^{*}	0.02
Fargo ND	4.57^{**}	0.09	-0.03	$5.45x10^{-4*}$	$-2.64x10^{-7**}$	0.17	0.08
Jackson MS	2.88^{**}	0.74	-0.65	$7.09x10^{-4**}$	$-1.78x10^{-7}$	0.36	0.30^{**}
Rochester MN	4.00^{**}	0.28	-0.29^{**}	$7.02x10^{-4}$	$-1.69x10^{-7}$	0.18^{**}	0.03
Wausau/Central WI	5.11^{**}	0.16	-0.02	$3.72x10^{-4}$	$-1.17x10^{-7}$	0.11	0.03
Durango CO	4.46^{**}	0.29	0.05	0.02^{**}	$-5.83x10^{-7**}$	0.005	-0.04
Jacksonville NC	5.12^{**}	-0.30	0.12	$8.27x10^{-4**}$	$-9.01x10^{-8}$	-0.009	-0.2

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* statistically significant at <.10
** statistically significant at <.05
[a] The dependent variable is the log of the average coach fare. Adjusted R^2s range from .08 to .66. The overall F-statistic is significant in all of the equations with a range of 2.5 to 62.0.

travel segments increases, so do fares, although in 1987 only four of these segment coefficients are statistically significant. Both distance and segment coefficients are consistent with the *a priori* hypotheses.

The absence of significant coefficients for the market concentration measures along with the relatively consistent significance of the production-related measures suggests that there is no support for the contention that as concentration levels increase, barriers to entry rise that allow airlines to increase fares without the fear of enticing other firms to enter the market. Furthermore, there is little evidence that airlines in these markets identify the profit maximizing demand and then set fares at a level that would generate that demand. Instead, the price equations indicate that fares in these markets are driven primarily by production concerns--as would be expected in contestable markets.

Table 4.
Two-Stage Least Squares Parameter Estimates of the 1983 Demand Equation[a]

	Coefficients			
Destination Airport	Constant	ln(P)	ln(Y)	PO°25
Long-Standing Hubs				
Chicago-O'Hare IL	-18.74**	-1.65**	3.45*	3.09×10^{-7}**
Minn/St.Paul MN	-29.97**	-1.32**	4.42**	1.91×10^{-7}**
Denver CO	-31.45**	-1.36**	4.62**	2.30×10^{-7}**
Dallas/Ft.Worth TX	-20.11**	-3.01**	4.43**	3.14×10^{-7}**
Atlanta GA	-23.83**	-3.21**	4.97**	1.57×10^{-7}**
New Hubs				
Detroit MI	-24.55**	-0.62	3.35**	1.82×10^{-7}**
Washington DC-Dulles	-27.59**	0.09	3.14**	1.65×10^{-7}**
Cleveland OH	-39.70**	-0.309	4.76**	1.86×10^{-7}**
Charleston WVA	-35.22**	-0.83**	4.48**	-2.86×10^{-9}
Salt Lake City UT	-30.77**	-1.96**	4.84**	2.44×10^{-7}**
Charlotte NC	-16.71**	-1.72**	3.12**	1.38×10^{-7}**
Non-Hubs				
Omaha NE	-28.19**	-0.74**	3.72**	1.24×10^{-7}**
Sacramento CA	-19.85**	-0.75**	2.82**	2.41×10^{-7}**
Fargo ND	-20.59**	-1.63**	3.40**	5.12×10^{-8}
Jackson MS	-21.15**	-1.69**	3.60**	1.54×10^{-7}**
Rochester MN	-26.43**	-0.53	3.33**	4.85×10^{-9}
Wausau/Central WI	-12.66	-1.48**	2.41**	8.89×10^{-8}
Durango CO	-22.93**	-0.78**	3.07**	-1.58×10^{-8}
Jacksonville NC	-9.98	-0.36	1.37*	1.53×10^{-7}**

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* statistically significant at <.10
** statistically significant at <.05
[a] The dependent variable is the log of the number of coach tickets. Adjusted R^2s range from .14 to .46. The overall F-statistic is significant in all of the equations with a range of 4.4 to 71.0.

The Demand Equations. The parameter estimates of the 1983 and 1987 demand equations are shown in Tables 4 and 5. Travel to all 19 airports appears to be quite income elastic. The coefficients suggest that in both years travel to long-standing hubs tends to be more income elastic than travel to new hubs and non-hub airports. Consumers apparently view travel to hub cities to be more of a luxury good (less of a necessity) than travel to smaller, non-hub cities.

Table 5.
Two-Stage Least Squares Parameter Estimates of the 1987 Demand Equation[a]

	Coefficients			
Destination Airport	Constant	ln(P)	ln(Y)	POP25
Long-Standing Hubs				
Chicago-O'Hare IL	3.91	-5.82**	3.55**	3.95×10^{-7}**
Minn/St.Paul MN	-14.99**	-3.00**	3.81**	2.40×10^{-7}**
Denver CO	-5.60	-5.24**	4.17**	3.00×10^{-7}**
Dallas/Ft.Worth TX	-16.04**	-2.67**	3.74**	2.86×10^{-7}**
Atlanta GA	-19.98**	-4.45**	5.25**	1.80×10^{-7}**
New Hubs				
Detroit MI	-6.57	-2.85**	2.76**	2.02×10^{-7}**
Washington DC-Dulles	-28.97**	-0.42	3.65**	1.42×10^{-7}**
Cleveland OH	-19.26**	-1.65**	3.36**	1.42×10^{-7}**
Charleston WVA	-22.20**	-0.74**	3.02**	6.41×10^{-8}
Salt Lake City UT	-19.58**	-3.52**	4.62**	1.50×10^{-7}**
Charlotte NC	-17.74**	-2.25**	3.60**	4.18×10^{-8}
Non-Hubs				
Omaha NE	0.83	-4.67**	3.02**	1.49×10^{-7}**
Sacramento CA	-15.63**	-2.17**	3.31**	1.76×10^{-7}**
Fargo ND	-.72	-4.31**	1.76**	2.13×10^{-7}**
Jackson MS	-14.09**	-4.56**	4.59**	1.17×10^{-7}**
Rochester MN	-10.93	-2.63**	2.95**	1.39×10^{-7}**
Wausau/Central WI	-15.3	-1.51*	2.72**	7.40×10^{-8}
Durango CO	-9.95	-2.18**	2.54**	6.50×10^{-8}
Jacksonville NC	-20.66**	-0.58**	2.68**	8.23×10^{-8}

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* statistically significant at <.10
** statistically significant at <.05
[a] The dependent variable is the log of the number of coach tickets. Adjusted R^2s range from .20 to .48. The overall F-statistic is significant in all of the equations with a range of 11.8 to 69.1.

In both years, fares tend to be most price elastic for travel to long-standing hub airports, followed by new hubs, and then non-hubs. These differences are likely to exist because of differences in the availability of consumption and/or production substitutes across airport types. In the case of consumption substitutes, the consumer's underlying preference structure may be such that travel to a smaller, non-hub city is viewed as a unique good with no close substitutes (e.g., grandmother lives in Sacramento, CA and if you want to visit her, you must go to Sacramento). Whereas travel to a large city may be seen as having many close substitutes (e.g., if the airfare from Chicago to Miami is too high you decide instead to fly to Phoenix for your winter vacation).

In the case of production substitutes, people traveling to smaller, non-hub cities may have few alternatives to traveling by air. In contrast, people traveling to larger, hub cities generally have greater access to relatively convenient transportation substitutes (e.g., express bus or train service). Operating singly or in combination, both of these effects would lead to price elasticity patterns across destination airports like the ones found here.

A comparison of price elasticity coefficients across the two years reveals that in virtually all cases air travel becomes more price elastic during the mid 1980s. In part, this shift may be attributable to the increasing number of price sensitive leisure travelers who entered the airline market during the mid 1980s. In addition, the mid 1980s saw a change in the availability of production substitutes for business travelers. Between 1983 and 1987, firms began to use tele-conferences, conference phone calls, and express mail to conduct business that once had to be done in person. These technological shifts along with the increase in the number of pleasure travelers could explain why travel became more price elastic during this period.

Discussion and Conclusions

Nineteen-eighty-three was the first year of complete economic deregulation of commercial air travel in the US. It was the end of a transition period during which both fares and concentration levels had generally declined. Between 1983 and 1987, fares continued their downward trend, but overall market concentration increased. Despite these shifts, it appears that markets for air travel remained relatively contestable between 1983 and 1987. Evidence of this contestability is gathered from the 1983 and 1987 fare equations estimated with data on round-trip coach fares. If contestability declined during this period, then one would expect to see quantity, origin airport concentration, and (perhaps) the existence of another origin airport playing a significant role in the setting of airfares by 1987. Instead, the analyses indicate that these factors played a small role in the setting of airfares in either year.

It is noteworthy that the two markets with consistent evidence of oligopolistic pricing behavior (i.e., Chicago and Atlanta) are also two of the largest markets for air travel in the current study (see Table 1). As such, both Chicago's O'Hare and Atlanta's Hartsfield Airports may serve as leading indicators of what lies ahead in air travel markets. Alternatively, they could be some of the last remaining examples of relatively uncontestable markets that may have characterized the early deregulatory era.

While there is little evidence that the 19 sample markets declined in contestability between 1983 and 1987, the analyses reveal considerable evidence that consumer demand became more price elastic during this period. Such changes in price elasticities have direct implications for consumer welfare. In general, the more price elastic the demand, the smaller the welfare loss (gain) implied by a price increase (decrease). Thus, it would appear that during the mid 1980s, consumers became increasingly insulated from both increases and decreases in airfares--especially if they were travelling to long-standing hub airports.

Deregulation of the commercial airline industry precipitated numerous changes in air travel markets by the mid 1980s. However, the analyses presented here suggest that full deregulation was not associated with an increase in airlines' market power during that period. Are these conclusions inconsistent with the work of others? It is difficult to say.

Previous studies that find a positive relationship between concentration and airfares have generally taken a very different approach than the one used here. Often times the empirical work used aggregate and/or bivariate data (Air Transport Association, 1989; Congressional Budget Office, 1988; Dempsey, 1990; Office of the Secretary of Transportation, 1990). If multivariate modelling was based on more micro-level data, the findings on the relationship between concentration levels and airfares were either equivocal (Borenstein, 1989; 1990) or quite small (Bailey, Graham, and Kaplan, 1985).

Admittedly, to draw confident conclusions about the relationship between market concentration and airlines' pricing behavior, the current study should be extended to include more recent data. Deregulation skeptics caution that recent growth in frequent flyer programs, computer reservation systems, and gate controls at congested airports create effective barriers to entry in most air travel markets. Furthermore, the number of carriers in the US commercial airline market continues to shrink, suggesting that the national market is likely becoming more oligopolistic. Data Bank 1A tapes for the third quarter 1990 have just been released by the Department of Transportation. Our next task is to use these data to generate estimates that reflect more recent market experiences.

References

Air Transport Association. (1989) Hub operations: An analysis of airline hub and spoke systems since deregulation. New York: Unpublished Report.

Bailey, E., Graham, D. & Kaplan, D. (1985) Deregulating the airlines. Cambridge: MIT Press.

Baumol, W.J., Panzar, J.C. & Willig, R.D. (1982) Contestable markets and the theory of industry structure. San Diego: Harcourt Brace Jovanovich.

Borenstein, S. (1991) The dominant-firm advantage in multi-product industries: Evidence from the U.S. airlines. Quarterly Journal of Economics, forthcoming.

___________. (1990) Airline mergers, airport dominance, and market power. American Economic Review, 80(2), 400-404.

___________. (1989) Dominance and market power in the U.S. airline industry. Rand Journal of Economics, 20, 344-365.

Congressional Budget Office. (1988) Policies for the deregulated airline industry. Washington, DC: U.S. Congress.

Dempsey, P.S. (1990) Flying blind: The failure of airline deregulation. Washington, DC: Economic Policy Institute.

Department of Transportation. (1990) Secretary's task force on competition in the U.S. domestic airline industry: Executive summary. Washington, DC: U.S. Dept. of Transportation.

Fawcett, S.E. & Farris, M.T. (1989) Contestable markets and airline adaptability under deregulation. Transportation Journal (Fall), 13-24.

Joesch, J.M. & Zick, C.D. (1991) Growing market concentration and changes in consumer welfare: The case of the U.S. commercial airline market. Journal of Consumer Policy, forthcoming.

Kahn, A.E. (1988) Surprises of airline deregulation. American Economic Review, 78(2):316-322.

Kmenta, J. (1986) Elements of econometrics. New York: Macmillan Publishing Company.

McGinley, L. (1989) Airline rivalry declines sharply at major hubs. Wall Street Journal, September 20.

Mead, K.M. (1989) Air fares and service at concentrated airports. Testimony before the Congressional Subcommittee on Aviation, Washington, DC: U.S. General Accounting Office, (June 7).

Moore, T.G. (1986) U.S. airline deregulation: Its effects on passengers, capital, and labor. Journal of Law and Economics, 29 (April), 1-28.

Morrison, S. & Winston, C. (1990) The dynamics of airline pricing and competition. American Economic Review, 80(2), 389-393.

___________. (1989) Airline deregulation and public policy. Science, 245 (August 18), 707-711.

___________. (1986) The economic effects of airline deregulation. Washington, DC: Brookings Institute.

Nomani, A.Q. & Barrett, P.M. (1990) Control of major airports by carriers is focus of justice department inquiry. The Wall Street Journal, June 18.

Office of the Secretary of Transportation. (1990) Executive summary of the secretary's task force on competition in the U.S. airline industry. Washington, DC: U.S. Department of Transportation.

Ogur, J.D., Wagner, C.L. & Vita, M.G. (1988) The deregulated airline industry: A review of the evidence. Washington, DC: Bureau of Economics, Federal Trade Commission.

Schwieterman, J.P. (1985) Fare is fair in airline deregulation: The decline of price discrimination. Regulation, (July/Aug.), 32-38.

Trapani, J.M. & Olson, C.V. (1982) An analysis of the impact of open entry on price and the quality of service in the airline industry. The Review of Economics and Statistics, 64(1), 67-76.

U.S. Department of Commerce. (1986) County and city data book, 1985. Washington, DC: Bureau of the Census.

U.S. Department of Transportation. (1989) Research and special programs administration. Passenger Origin and Destination Survey. Washington, DC: Office of Aviation Information Management.

Local Airport Concentration and Consumer Views of the Need for Airline Reregulation

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This paper reports on a three-city study of consumer perceptions of airline deregulation. Using computer-assisted telephone interview techniques, a random sample of Salt Lake County, Denver County, and Multnomah County (Portland, Oregon) residents were asked about various regulatory proposals. The study's key findings are that (1) support for renewed regulation of prices does not necessarily correspond with support for reregulation of routes, and (2) support for reregulation is strongest among less affluent respondents, members of the Democratic Party, and people who see a deterioration in either airline safety or fares for people with flexible travel schedules. In addition, residents of Salt Lake County are less likely to favor the re-regulation of fares than are residents of Denver or Multnomah counties.

The deregulation of the airline industry, begun in 1978, was one of the first major experiments in economic deregulation in the United States. Initial assessments of airline deregulation by economists were glowing, with most finding that deregulation had stimulated competition and substantially reduced prices without sacrificing quality or safety.

While economists raved about airline deregulation, air travellers began to equate it with more crowded planes, more frequent delays and cancellations, more capricious fares, and more near-collisions in the air. Cartoonists, columnists, and editorial writers had a field day criticizing airline travel, and many consumers began to lodge complaints with government officials.

By the end of the 1980s, some public officials were calling for re-regulation of the airline industry, although not necessarily to the extent of the pre-deregulation era (Dempsey, 1990; McGinley, 1989; Karr and McQueen, 1989; Weiner, 1990). As in the early days of airline deregulation, debate focused on concentration ratios and airline fares. With the exception of a few superficial opinion polls, no one analyzed consumer views of airline deregulation and what, if anything, needed to be done about it. Yet, the findings of such a study could make a unique contribution to the on-going debate regarding the de/re-regulation of the airline industry.

The authors of this paper are currently studying consumer opinion toward airline deregulation in three large western cities--Salt Lake City, Denver, and Portland.

Literature Review

Public policy makers, whether elected or appointed, frequently base their decisions on the results of two different types of studies--economic studies of quantifiable costs and benefits and public opinion studies of people's perception of these costs and benefits. In the case of airline deregulation, studies of the first type have far outnumbered studies of the second type.

Economic Studies

The Airline Deregulation Act of 1978 precipitated the phased withdrawal of federal government regulation so that, by 1983, airlines were free to decide which routes to serve and what prices to charge. The economic studies that appeared in the mid-1980s generally concluded that airline deregulation was working well. That is, it had increased competition and improved consumer welfare (Bailey, Graham, and Kaplan, 1986; Moore, 1986; Morrison and Winston, 1986; Trapani and Olson, 1982). Even as the 1980s came to a close, studies continued to appear documenting the net benefits of airline deregulation. A Federal Trade Commission study found that average prices fell, although mostly on long distance routes and in large city

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markets (Ogur, Curtis, and Wagner, 1988). A U.S. Department of Transportation (1990) study also reported that travelers benefitted by receiving more service at a lower cost. The Air Transportation Association (1989) concluded that the degree of competition in the airline industry had increased substantially since airline deregulation. Surveying the evidence, Alfred Kahn (1990), the architect of airline deregulation affirmed the continued success of deregulation despite the federal government's failure to monitor airline mergers adequately.

The scientific support for airline deregulation was not unanimous, however. Several researchers began to question whether consumer welfare was being well served in an increasingly oligopolistic market (Bailey and Williams, 1988; Mead, 1989; Karr and McQueen 1989; McGinley 1989). An Economic Policy Institute study released in 1990 claimed that routes had become more circuitous, service had deteriorated in quality, and the margin of safety had narrowed under deregulation (Dempsey, 1990). A second study found that deregulation's effect on consumer welfare was mixed (Joesch and Zick, 1991a, 1991b). Estimates of changes in consumer welfare varied depending on the concentration level of the origin and destination airports as well as the time period being analyzed.

The evidence most commonly used to indict airline deregulation was rising market concentration. Researchers and politicians alike cited the rash of airline mergers in the 1980s and the resulting increase in market concentration, especially in some hub cities. Whereas 14 carriers accounted for 90 percent of domestic commercial air travel in 1984, by 1988 that number had dropped to 8 carriers. At the local market level, no hub airport in 1984 had one airline accounting for more than 75 percent of the domestic traffic; however, by 1988, there were six such airports traffic (McGinley, 1989). Advocates of deregulation countered that increased market concentration reflected economies of scale and that market performance (i.e., prices and quality) was more relevant than market structure for judging deregulation (Kahn, 1990).

Opinion Studies

The mass media reported on, and probably amplified, public dissatisfaction with the results of airline deregulation. In addition to documenting the increasing number of consumer complaints lodged with airlines and government agencies (Dahl, 1990), major media companies sponsored public opinion polls to gauge public sentiment regarding airline deregulation.

Throughout most of the 1980s, the media-sponsored polls suggested that the public felt that airline deregulation's effects had been salutary, except with respect to airline safety (ABC News/Washington Post, 1987; Harris, 1988; Roper, 1986). By the end of the decade, however, public opinion soured regarding the non-safety effects of airline deregulation as well. A 1989 poll conducted for the Wall Street Journal reported that 43 percent of a national sample named the airline industry (from a list of 22 industries) as the one in which they had the least confidence. In addition, a third of those polled indicated that their esteem for airlines had fallen "dramatically" during the last five years (Winans and Dahl, 1989).

When asked what actions the government should take concerning deregulation, members of the general public have consistently supported more action to insure airline safety. But there has been more ambivalence regarding regulation of the economic aspects of the industry. A Roper (1986) poll reported that about half of the respondents thought there should be more controls on safety, but only 4% wanted more controls of prices and only 2% thought there should be more control of the quality of air service. Similarly, a CBS News/New York Times (1987) poll reported that 38% of the respondents thought the government should be responsible for regulating airline prices and schedules, but 54% thought the government should not.

In sum, results from opinion polls indicate that people separate deregulation's direct effects on competition and prices from its (perceived) indirect effects on safety. Until very recently at least, the general public has approved of deregulation's effect on prices and service, and has not seen the need for renewed government regulation. With respect to safety, in contrast, survey respondents have consistently reported a lack of confidence in the airlines and favor an expanded government safety role.

Despite the information generated by public opinion polls, there have been no studies that analyze the bases of public sentiment regarding airline deregulation. Not only are results presented in the aggregate without attention to individual differences by income, region of the country, or flight experience, there also have been no attempts to relate public perceptions to the degree of competition in the airport(s) that serve them.

Methods

Research Design and Data Collection

The model underlying this three-city study is one in which public perceptions of the need for reregulation are a function of respondent characteristics as well as the nature of airline competition in his/her local market. The factors hypothesized to influence consumer attitudes toward airline regulation are: socio-demographic characteristics (i.e., education level, political affiliation, and household income), flight experience (i.e., number of flight taken in the past twelve months), and respondent assessment of price and safety trends in the airline market during the past three years.

The sample for this study was drawn from the residents of Salt Lake County, Utah, Denver County, Colorado, and Multnomah County, Oregon. Salt Lake County is served by Salt Lake International Airport, a hub airport where Delta Airlines accounted for 80% of the 5.2 million enplanements in 1989 (Federal Aviation Administration, 1989). Denver County is served by Stapleton International Airport where two airlines accounted for 85% (Continental 41% and United 44% of the market) of the 12.3 million enplanements in 1989 (Federal Aviation Administration, 1989). Multnomah County (which includes the city of Portland) is served by Portland International Airport where no one or two carriers accounted for more than 25% of the 3.0 million enplaning passengers in 1989 (Federal Aviation Administration, 1989). Portland International is not considered a hub for any major airline.

In this study, the effect of local market concentration on opinions regarding price and quality trends as well as opinions regarding airline regulation was tested. The data were obtained by telephone survey of 881 randomly sampled respondents in Salt Lake County, 399 randomly sampled respondents in Denver County, and 405 randomly sampled respondents in Multnomah County. The total sample size was 1685. Interviews were done in April and May 1991 in Salt Lake County and from early September to early October in Denver and Multnomah counties. The representative samples were drawn using random digit dialing. This method of sample selection obviously excludes households without telephones, but such households usually only constitute 2-3% of a state's population. The response rate was 78% for Salt Lake County and 76% for Denver and Multnomah counties.

Measures

The dependent variables in this study represent consumer opinions of what actions government should take regarding the regulation of the airline industry. Specifically, consumers were asked about the extent to which the government should be involved with setting airline fares and routes.

The independent variables used in this analysis were limited to those that could be asked of all respondents, regardless of whether they had flown in the recent past, plus the respondent's county of residence. It was assumed that even people who had not flown recently would have opinions about airline prices and safety. For example, respondents may have chosen not to fly precisely because they believe prices were too high and/or safety precautions were inadequate. Moreover, experiences as a flyer are not the only source of information about the airline industry. Newspapers, television, radio, and even social conversations often contain news about local air travel issues. Thus, the opinions of non-flyers were gathered along with those of recent flyers, if for no other reason than both types of people have input into policy decisions on airline regulation.

For the purposes of this study, a variety of variables were measured that could conceivably affect opinions regarding the need for reregulation of the airline industry. One set of variables consists of socioeconomic and demographic characteristics: household income, educational attainment, and political affiliation, of the respondent. Along with these background variables, another question gauged the number of times, if any, the respondent had flown out of the three airports in his/her county during the previous twelve months. A final set of variables measured perceptions of trends over the last three years in airline prices (for travellers with flexible and inflexible schedules) and airline safety.

Results

The analyses presented in this section were based on the 1685 respondents who provided complete information on all relevant survey questions. Fifty-two percent of these respondents were female. Respondents averaged 42 years of age, had 13.8 years of formal schooling, and had a mean household income of $29,461. During the previous twelve months, 48% of the respondents had flown on a regularly scheduled commercial airline flight. Of those who had flown, approximately two-thirds had taken only one or two flights out of their respective airports.

Table 1 presents frequency distributions for the attitudinal variables that are used in the analysis. The table reveals substantial diversity in public opinion regarding safety and price trends. In addition, a number of people felt they were not knowledgeable enough to comment on either price or safety trends.

Table 1.
Frequency Distributions on Attitudinal Variables (N=1685)[a]

Question: During the past three years, would you say that airline fares in and out of Salt Lake have become cheaper, stayed the same, or become more expensive for people with flexible travel schedules? (Flexible meaning one can choose travel time, such as staying over a Saturday night to get a lower fare.)

	Salt Lake	Denver	Portland	Row Percent Totals
Cheaper	13.1%	12.8%	15.3%	13.5%
Stayed about the same	17.9	18.8	16.8	17.8
More expensive	48.6	57.6	53.6	51.9
Don't Know	20.5	10.8	14.3	16.7

Question: For people with inflexible travel schedules, have fares become cheaper, stayed about the same, or become more expensive?

	Salt Lake	Denver	Portland	Row Percent Totals
Cheaper	2.3%	1.5%	2.0%	2.0%
Stayed about the same	11.9	12.8	10.9	11.9
More expensive	62.8	68.7	70.6	66.1
Don't know	23.0	17.0	16.5	20.1

Question: In the nation as a whole, what has happened to airline safety compared to three years ago -- has commercial airline safety become better, stayed the same, or become worse?

	Salt Lake	Denver	Portland	Row Percent Totals
Better	21.7%	21.6%	23.7%	22.1%
Stayed the same	33.7	37.8	35.8	35.2
Worse	36.1	34.3	32.3	34.8
Don't know	8.5	6.3	8.1	7.9

[a] Sub-sample sizes were Salt Lake = 881, Denver = 399, and Portland = 405.

In an attempt to identify the factors that may influence public opinion regarding reregulation, two multivariate analyses were undertaken. The first equation focused on opinions regarding the reregulation of fares while the second examined opinions regarding the reregulation of routes. In each equation the independent variables included measures of the respondent's socioeconomic characteristics (i.e., education level, political party affiliation, and total household income), flight experience (i.e., number of flights taken during the past twelve months), and his/her assessment of price and safety trends in the airline market during the past three years.[4] Attitudes about price and safety trends were transformed into a series of dummy variables. The omitted category in each of these series was composed of those respondents who reported thinking that prices (or safety) had remained the same or become cheaper (or improved) during the past three years.

There are several ways in which the dependent variables could have been coded. Under one possible coding scheme, only those respondents who answered "yes" or "no" to the reregulation questions would be analyzed. If this were done, information on the 19 percent of the survey respondents who answered "don't know" to either one or both of the reregulation questions would have been lost. To avoid eliminating such a potentially important subset of the survey sample, a more complicated coding scheme was adopted where a respondent answering "no" was coded as a 1, someone answering "don't know" was coded as a 2, and someone answering "yes" was coded as a 3. This arrangement assumed that "don't know" respondents fell into a "middle ground" somewhere between those respondents who opposed reregulation and those respondents who favored it.

The ordinal nature of the dependent variables in the price and route reregulation equations meant they both violate the assumptions needed to use ordinary least squares regression analysis (Blalock, 1979). Two limited dependent variable estimation techniques, discriminant analysis and logistic regression, are often used in research that deals with ordinal dependent variables. For this investigation, logistic regression was selected over discriminant analysis because it requires fewer estimating assumptions (Press and Wilson, 1978). Specifically, given these three-point opinion scales, it was most appropriate to estimate each equation using an ordered logit program (Maddala, 1983).[5]

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[4] The original estimating equation also included the respondent's age and a variable that measured who had paid for the ticket. However, initial estimations revealed that these variables were not significant and thus they were dropped for reasons of parsimony.

The estimates of the ordered logit equations appear in Table 2. As one examines the coefficients, it is important to note that an ordered logit coefficient is interpreted as the change in the log of the odds ratio of moving from one level to the next (e.g., from saying "no," the government should not get involved in airline route regulation again, to saying "I don't know"), given a one unit change in an independent variable, holding all other independent variables in the equation constant (McKelvey and Zavoina, 1975).

Table 2.
Parameter Estimates of the Ordered Logit Equations (t-ratios in parentheses)

Independent Variables	Dependent Variables[a] Reregulation of Fares?	Reregulation of Routes?
Constant	-.196 (-.575)	-.505 (-1.48)
Respondent's Flight Frequency (number/yr)	-.002 (-0.215)	-.010 (-.762)
Respondent's Education (yrs)	-.039 (-1.61)	-.029 (-1.20)
Household Income ($/yr)	-.000 (-2.74)**	-.000 (-1.20)
Democrat[b] (1=yes; 0=otherwise)	.451 (3.63)**	.331 (2.63)**
Independent[b] (1=yes; 0=otherwise)	.202 (1.64)	.106 (.856)
Fares More Expensive for Inflex Traveler[c] (1=yes; 0=otherwise)	-.221 (-1.50)	-.235 (-1.58)
Fares DK for Inflexible Traveler[c] (1=yes; 0=otherwise)	-.643 (-2.89)**	-.401 (-1.85)*
Fares More Expensive for Flexible Traveler[d] (1=yes; 0=otherwise)	.757 (6.51)**	.339 (2.94)**
Fares DK for Flexible Traveler[d] (1=yes; 0=otherwise)	.734 (3.47)**	.513 (2.54)**
Safety Worse[e] (1=yes; 0=otherwise)	.725 (7.00)**	.658 (6.20)**
Safety DK[e] (1=yes; 0=otherwise)	.478 (2.25)**	.544 (2.55)**
Denver County Residents[f]	.043 (0.34)	.276 (2.18)**
Portland County Residents[f]	.109 (0.88)	.467 (3.78)**
Alpha(1)[g]	.392 (12.51)**	.438 (13.12)**

** statistically significant at .05
* statistically significant at .10

[a] In both cases, the dependent variable can take on three different values: 1 = no, 2 = DK, and 3 = yes. The overall χ^2s for each equation was 136.38 and 91.36 respectively. Both X^2s are statistically significant at the .05 level.

[b] The omitted category for this group of dummy variables is composed of those respondents who identified themselves as Republicans.

[c] The omitted category for this group of dummy variables is composed of those respondents who said they believed that airline fares had become cheaper or remained the same for people with inflexible travel schedules during the past three years.

[d] The omitted category for this group of dummy variables is composed of those respondents who said they believed that airline fares had become cheaper or remained the same for people with flexible travel schedules during the past three years.

[e] The omitted category for this group of dummy variables is composed of those respondents who said they believed that safety had remained the same or improved during the past three years.

[f] The omitted category for this group of dummy variables is composed of those respondents who were Salt Lake County residents.

[g] Alpha(1) is a level-specific intercept shifter estimated in the ordered logit program.

The results indicate that two socioeconomic variables--household income and political party affiliation--influenced attitudes regarding reregulation of the airline industry. Respondents from higher income households were less likely to favor reregulation of airline fares, holding other factors constant, but household income did not appear to influence a respondent's opinion regarding route reregulation. Respondents who identified themselves as Democrats were more likely to favor both route and fare reregulation than were Republican respondents (the omitted dummy variable category). There were no significant differences in opinion between Independents and Republicans. Together, the results are in keeping with the notion that lower income, politically liberal individuals are particularly likely to favor government intervention in the marketplace.

Public opinion regarding reregulation of airline fares and routes did not vary with the respondent's education level or flight frequency. The lack of association between flight frequency and one's opinion about reregulation is particularly interesting. If deregulation has led to a categorical expansion of routes and a general reduction in fares, then frequent flyers should have a stronger vested interest in maintaining the deregulated market than those individuals who fly infrequently. If deregulation has led to a substantial decline in routes serviced and a general increase in fares, then frequent flyers should be more likely than infrequent flyers to voice support for government intervention in this market. Either way, a relationship between flight frequency and opinion regarding reregulation would have been expected. The absence of such a relationship may indicate that flyers' experiences with fares and routing vary considerably from trip to trip or that there are distinct subsets of flyers (e.g., business travelers and pleasures travelers) whose opinions counterbalance each other.

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[5] It can be argued that opinions regarding the reregulation of fares and opinions regarding the reregulation of routes are simultaneously determined. If this is true, then the two equations should be estimated simultaneously. (The data had a simple correlation of .43 between the two variables.) However, an investigation of several statistical software programs, including SAS, LIMDEP, and SPSSX, revealed that none of them had the capacity to estimate simultaneous ordered probits. As a result, estimation of each equation was done separately.

Compared to the two other cities in the study, Salt Lake respondents were significantly more inclined to oppose reregulation of routes than Denver and Portland respondents. This may reflect some of the unique aspects of the Salt Lake City market. During the initial years of deregulation, Western Airlines made Salt Lake City one of its new hub airports, increasing route service between Salt Lake and other cities. In the mid 1980s, Delta Airlines bought out Western Airlines and continued the expansion of the number of "spoke" cities serviced by the "hub" airport in Salt Lake City. In short, the residents of Salt Lake County have seen a substantial increase in the number of destination cities serviced by direct flights from the Salt Lake Airport since airline deregulation was initiated in the late 1970s. Thus, the substantial opposition to the reregulation of routes voiced by survey respondents may be attributable to their perception that any reregulation of airline routes would lead to a reduction in direct-flight service at the Salt Lake City Airport.

Attitudes about recent pricing trends for the flexible traveler were a strong predictor of public opinion regarding airline reregulation in the current analysis. Specifically, people who believed that fares had become more expensive for flexible travelers were significantly more likely to favor government re-intervention in the setting of both fares and routes than were people who believed that fares have remained the same or gotten cheaper for flexible travelers during the past three years, ceteris paribus In contrast, the relationship between attitudes about recent pricing trends for inflexible travelers and opinions regarding reregulation were generally insignificant (and opposite in sign in the one instance where the coefficient was significant at the .10 level).[6]

One possible explanation for this pattern of results is that the public is unsympathetic to the plight of the inflexible flyer. The inflexible flyers appears to be unwilling to adjust their flight schedules to reduce the airfare or are people whose travel is paid for by an employer. In contrast, the flexible travelers may be thought of as "meeting the airlines half way" by purchasing their tickets well in advance, staying over a Saturday night, and/or traveling only on certain days/routes. If a respondent perceives that flexible flyers' fares are rising despite these concessions, then he/she may be more likely to believe that reregulation might be called for. Conversely, if a person perceives that flexible travelers are being rewarded with lower fares in exchange for these ticket restrictions, then favoring the current non-regulatory policy seems a more likely response.

Finally, an examination of the coefficients associated with the safety dummy variables shows that respondents who believed safety had declined during the past three years were more likely to support the reregulation of both fares and routes than were respondents who believed safety has remained the same or improved, ceteris paribus. Similarly, those who reported that they were unsure about safety trends were also more likely to support reregulation.

The relationship between negative attitudes about airline safety trends and support for reregulation of the airline industry is especially interesting in light of two facts. First, while the 1978 Airline Deregulation Act phased out government controls on commercial air fares and routes, it did not alter the government's role in the regulation of airline safety. Second, the airline accident rate has shown a general decline since the early 1980s when the phasing in of economic deregulation was completed (Winans and Dahl, 1989). Thus, there is neither a statutory nor an evidentiary link between safety and route/fare deregulation in the commercial airline market. Nevertheless, those respondents who (incorrectly) perceive air safety to be on the decline were more likely to be favorably disposed to government's reregulation of this industry.

Discussion and Conclusions

This papers reports results from a three-city study of public perceptions of airline deregulation. A non-hub city, Portland, a long-standing hub city with two major carriers, Denver, and a recently created hub city with one dominant carrier, Salt Lake City, were compared.

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[6] While the frequency distributions on these two attitudinal measures were quite similar (see Table 1), their simple correlation is only .18, suggesting that those respondents who believe fares have increased (decreased) for the flexible traveler are not generally the same respondents who believe fares have increased (decreased) for the inflexible traveler.

Given the limits of a three-city study, what can be said about public preference for airline reregulation? Public opinion appears to be complex. Opinions about fare reregulation are quite independent of opinions about route reregulation. Thus, it cannot be said that consumers hold simple, undifferentiated views regarding the need for airline deregulation.

It is important to recognize that the vast majority of consumers favored neither reregulation of fares nor reregulation of routes. In contrast, a large majority of the sample members (60.2%) believed that federal regulations regarding airline safety are not strict enough (data not reported in tables). Only 1.4% of the respondents felt that government safety regulation was too strict. While respondents who believed that safety had deteriorated with deregulation were more inclined to favor reregulation of fares and routes, the overall pattern of results suggest that people differentially assess the various aspects of airline deregulation.

References

ABC News/Washington Post Poll. 1987. Information provided by the Roper Center for Public Opinion, Storrs, CT.

Air Transport Association. 1989. Hub Operations: Analysis of Airline Hub and Spoke Systems Since Deregulation. Unpublished Report, May.

Bailey, Elizabeth, David R. Graham, and Daniel P. Kaplan. 1986. Deregulating the Airlines, Cambridge: MIT Press.

Bailey, Elizabeth, and Jeffery R. Williams. 1988. "Sources of Economic Rent in the Deregulated Airline Industry." Journal of Law and Economics. 31(April):173-202.

Blalock, Hubert M., Jr. 1979. Social Statistics (2nd edition). New York: McGraw-Hill.

CBS News/New York Times Poll. 1987. Information provided by the Roper Center for Public Opinion, Storrs, CT.

Congressional Budget Office. 1988. "Policies for the Deregulated Airline Industry." Unpublished Report, July.

Dahl, Jonathan. 1990. "Complaints to Airlines Again on the Upswing." Wall Street Journal, p. B1, March 13.

Dempsey, Paul Stephen. 1990. Flying Blind: The Failure of Airline Deregulation, Washington: Economic Policy Institute.

Federal Aviation Administration. 1989. Airport Activity Statistics of Certified Route Air Carriers. Unpublished report, December.

Harris Poll. 1988. Information provided by the Roper Center for Public Opinion, Storrs, CT.

Joesch, Jutta M. and Cathleen Zick. 1991a. "Growing Market Concentration in Consumer Welfare: The Case of the U.S. Commercial Airline Market." Journal of Consumer Policy. In press.

Joesch, Jutta M. and Cathleen Zick. 1991b. "Regulate? Deregulate? Regulate? "The Impact of Regulatory Reform on Consumer Welfare in the Airline Market." Proceedings for the Second International Conference on Research in the Consumer Interest. American Council on Consumer Interest. In press.

Kahn, Alfred E. 1990. "Deregulation: Looking Backward and Forward." Arts and Sciences Newsletter. p.1, Spring.

Karr, Albert R. and Michael McQueen. 1989. "Unlike Reagan Aides, Many Bush Officials Expand Regulation." Wall Street Journal, p.A1&A5, November 27.

Maddala, G.S. 1983. The Analysis of Qualitative Dependent Variables. New York: Oxford University Press.

McGinley, Laurie. 1989. "Republicans are Joining Chorus of Airline Critics Seeking Partial Reregulation to Spur Competition." Wall Street Journal. p.B3, September 21.

McKelvey, Richard D. and William Zavoina. 1975. "A Statistical Model for the Analysis of Ordinal Level Dependent Variables," Journal of Mathematical Sociology (Summer): 103-120.

Mead, Kenneth M. 1989. "Air Fares and Service at Concentrated Airports." Testimony before the Congressional Subcommittee on Aviation, Washington: U.S. General Accounting Office, June 7.

Moore, Thomas Gale. 1986. "U.S. Airline Deregulation: Its Effects on Passengers, Capital, and Labor." Journal of Law and Economics, 29(April):1-28.

Morrison, Steven and Clifford Winston. 1986. The Economic Effects of Airline Deregulation. Washington: Brookings Institute, 1986.

Ogur, Jonathan D., Curtis L. Wagner, and Michael G. Vita. 1988. Deregulated Airline Industry: A Review of the Evidence. Federal Trade Commission. Unpublished report, January.

Press, S. James and Sandra Wilson. 1978. "Choosing between Logistic Regression and Discriminant Analysis," Journal of the American Statistical Association, 73: 699-705.

Roper Poll. 1986. Information provided by the Roper Center for Public Opinion, Storrs, CT.

Trapani, John M. and C. Vincent Olson. 1982. "An Analysis of the Impact of Open Entry on Price and the Quality of Service in the Airline Industry." The Review of Economics and Statistics 64(1):67-76.

U.S. Department of Transportation. 1990. Secretary's Task Force on Competition in the U.s. Domestic Airline Industry. Unpublished report, February 1990.

Weiner, Eric. 1990. "Boning Up for the Next Battle over Deregulation." New York Times p. E5, April 1.

Winans, Christopher, and Jonathan Dahl. 1989. "Airlines Skid on Bad Moves, Bad News." Wall Street Journal. p.B1, September 20.

Households and Workers Engaged in Homebased Employment

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Households with homebased work had at least one member working for pay at least one day per week with no other office and have been in business six months. Farming did not qualify. Most households were located in cities; others were evenly divided between small towns and rural nonfarm areas. The overwhelming majority were homeowners and the majority had been in the same location for at least ten years. The majority were married; the majority had children; the majority consisted of only parents and children.

This workshop presents preliminary results from USDA-CSRS regional research project NE167, "At-Home Income Generation: Impact on Management, Productivity, and Stability in Rural/Urban Families." At-home income generation was defined as working for pay at or from home and having no other office for conducting this work. To qualify, at least one household member had to have been earning income at home for at least six months and working at the activity for at least eight hours per week. Farming did not qualify, but activities such as roadside markets did.

Telephone interviews were conducted in nine states -- Hawaii, Iowa, Michigan, Missouri, Ohio, Pennsylvania, New York, Utah, and Vermont -- by the Iowa Statistical Laboratory. Each state was divided into urban and rural areas by designating counties containing at least one city with a population of 25,000 or more as urban and the remaining as rural. New York City, Philadelphia and Detroit were excluded.

Survey Sampling, Inc. provided the sampling frame from their lists of household telephones. Because households generating income at home are a rare population, a pilot study was conducted to estimate the incidence of working numbers on the list and eligible households in each stratum. Seventy households in each area of each state except Hawaii were called. The proportion of households eligible ranged from 5.6 percent in urban Ohio, to 12.8 percent in rural Vermont. The total questionnaires completed was one less than the target of 900, and the distribution between the urban and rural strata was reasonably on target -- 373 urban compared with the target 360 and 526 rural compared with the target 540.

The households in each stratum represent different numbers of households in the population; consequently, the results presented in these papers are based on weighted data. Sample observations were weighted up to the total number of households in the stratum. For this purpose, the numbers of households in 1985 as estimated by the Bureau of the Census were used. An additional adjustment for nonresponse was made.

Table 1
Households With Homebased Work

Characteristic	Percent
Location	
City	53.9
Small town	19.4
Rural nonfarm	19.7
Farm	7.0
Home ownership	
Owners	87.3
Renters	12.7
Years in location	
5 Years or less	20.1
6-10 Years	16.6
11-20 Years	25.4
21 Years or more	37.4
Household Structure	
Single person	7.9
Two+ single people	3.9
Couple	22.5
Couple & others	12.0
Parent & children	2.2
Parent, children & others	.5
Couples & children	41.4
Couple, children, & others	9.6

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Working At Home: Who Is and At What?

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This paper provides descriptive results from a nine state regional research project, NE-167, funded by the Agricultural Experiment Stations of the participating states. Information was gathered in spring 1989 through a telephone survey utilizing 899 household managers in households where at least one person was engaged in generating income at home. Results are based on data weighted to represent the rural-urban nature of the combined state populations.

Demographic Characteristics of the Workers

About 58 percent of the workers were men, and 85 percent were married. Their years of education ranged from 6 to 20, with about two-thirds being high school graduates (33%) or having some college (30%). The median years of education was 13, and the median age of the workers was 41. More than one-half (56%) were in the 25-44 age bracket and one-fifth were 55 years or older.

Worker - Work Characteristics

Almost one-half of the workers (48%) had been engaged in work at home for five years or less compared to more than one-fourth who had worked at home for 10 years or more. The median number of hours worked at home was 1125. This is equivalent to 28 weeks, working 40 hours each week or 50 weeks, working 22.5 hours. Most of the homebased jobs were not seasonal (88%). Some of the workers (26%) also had jobs that were not homebased.

The occupational category represented by 24 percent of the workers was marketing-sales. This was followed (in descending order) by contractors (15%), mechanical-transportation (13%), and services (12%).

Data from the survey included information on income received in 1988 attributable to the homebased work. This income ranged from -$12,374 to $150,000. (The negative income figures are associated with business owners who operated at a loss in 1988). Mean home-based work income was $17,922 and the median was $11,000.

The majority of the workers (75%) were also owners of the businesses in which they worked. Only 25 percent were employees.

Description of Owned Business

Eighty-two percent of the businesses were held as sole ownerships in contrast to partnerships or corporations. The number of employees hired by owners varied from none (31%) to 16 or more (3%). Only 33 percent of the owners with paid employees hired their own household members.

The occupations most represented by the owner-workers were contractors (19%), crafts-artisans (17%), services (15%), mechanical-transportation (14%), and marketing-sales (13%).

The income range for owners was -$12,374 to $150,000. The mean income was $15,702, and the median income was $9,890.

Description of Employees

Employees had various bases for being paid. More than one-third were paid an hourly wage or salary (35%), in contrast to only 6 percent who were paid on a piece work basis.

Marketing-sales was the most likely occupational category for employees (51%) followed by professional-technical (15%) and clerical-administrative (12%).

The income range for employees was $0 to $110,000. The mean income for employees was $24,426, and the median income was $20,000.

This data, collected specifically from households where paid work occurs, gives the project investigators an opportunity to answer some of the questions which have recently been raised about home based work. What effects does it have on family life? What products and services are sold by these businesses? What are the economic impacts on local communities? To what extent are family members' "free" labor subsidizing these businesses? Efforts are on-going to answer these and many other questions.

Homebased Work and Management Practices

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In this regional research, one purpose was to study management in households where paid productive activities were based. In these households, employment as well as family activities might be a little more precise, clearly defined and recognizable to the person or persons involved. This analysis only involved homebased workers who were also managers of their households. Both the notion of manager and homebased worker were consistently defined within the sample group. The Deacon and Firebaugh management framework was utilized to formulate questions that were phrased and directed toward only the homebased paid work activity.

This subsample homebased workers who were also household managers were 53.6% (weighted) of the total sample. Descriptive statistics showed that this group was predominantly married females, whose average age was 42 and educational level was 14 years. The predominant household was a three member household with no children under six years of age and homeowners having lived in the community almost 20 years. The households were slightly more predominantly in towns or cities greater than 2500. In terms of homebased work characteristics, there was an average 8 year history of homebased work. This homebased work was predominantly associated with a self-owned business that hired employees and services. The homebased work was often not seasonal and involved marketing and sales or service type work.

Ten questions representing manage concepts were asked about the homebased work that the manager was involved in. A five point scale of likeness was used for recording the responses. Confirmatory Factor Analysis (principal components with VARIMAX rotation) was used to analyze the responses to the ten management questions. Factor loadings greater than .3 are noted; however, only factor loadings greater than .5 (highlighted in bold type) were considered important enough to identify and name factors.

Through prescreening and various evaluations and reevaluations, the wording of each management question was honed. It should be noted that respondents to the questionnaire had no noticeable difficulty in answering these management questions/concepts. This may be related to the "visibility" of management behavior in homebased employment versus other activities.

The Factor Analysis did produced three identifiable factors shown and labeled in Table 1. Factor 1 represents both implementing and output concepts. Factor 2 predominantly consists of planning concepts with exception of actuating. And finally, Factor 3 includes concepts from input, throughout and output segments of the management model. While these identifiable factors were gleaned from this analysis, there appears to be some "lapping over" of loadings relative to the distinct segments of the management model. This may mean that while specific management concepts are identifiable and generally related to subprocesses within the management model such as planning, the actual subsections such as inputs, planning, implementing and outputs are not necessarily separable ideas to the homebased worker. Factor 3 is also interesting in that one major management concept from each subsection loads with this factor.

In conclusion, management concepts seem to be apparent to homebased workers as they go about their homebased work. While specific components/concepts of the overall management process are identified, subprocesses such as planning implementing are not clearly identifiable with these concepts as delineated by the traditional Deacon and Firebaugh family management model.

Reference

Deacon, R.E. and F.M. Firebaugh. (1988) Family Resource Management, Boston: Allyn and Bacon, Inc.

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Table 1:
Factor Analysis (using SAS principals components procedure with VARIMAX rotation and weighted data)

	Factor Loadings		
	Factor 1	Factor 2	Factor 3
Management Concepts	IMPLEMENTING/ OUTPUT	PLANNING	INPUT/OUTPUT
INPUT			
Goals			.74974
PLANNING			
Standard setting		.72908	
Demand clarification		.52306	.39633
Resource assessment	.34203	.68805	
Action sequencing		.35724	.61608
IMPLEMENTING			
Actuating		.53108	.37840
Checking	.60588		
Adjusting	.73511		
OUTPUT			
Demand responses	.70716		
Resources changes	.52006		.56869

Child Care and Homebased Employment

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For some households the availability of a homebased employment or business opportunities may serve as one solution to today's child care crisis. However, some homebased work households continue to need child care and may have special child care needs such as location, hours and space.

There is limited literature on family life and homebased employment. Completed studies have often concluded that due to flexibility of scheduling and the closeness of one's workplace, working at home enhances the quality of family life (Horvath, 1986). Beach (1985) found that workdays frequently were interrupted by child, family and household tasks. The homebased worker, especially the women in her sample, tended to adjust the demand of paid work to the needs of their families. This was viewed as a positive aspect of working at home. Earlier small sample studies found that a major motivation for women to work at home was to care for their children (Pratt, 1984). However, Christensen (1988) determined that working at home does not necessarily eliminate the need for outside child care but it can solve some short-term child care problems such as a sick child. When first counting homebased workers nationally in 1985 Department of Labor study, Horvath (1986) quickly hypothesized that women with young children could just work for pay at home and take care of the children. The purpose of this paper was to examine the factors associated with the use of child care by homebased workers.

Taken from NE-167 sample of homebased employed households, the sample used in this analysis were only households with children who needed care. The typical homebased worker in this analysis was a 36 year old male who was married with two children and had 14 years of education with $40,000 annual family income from all sources in 1988. This homebased worker had lived an average of 15 years in a small town or rural community. The typical homebased worker had been engaged in this type of work for 6 years and was more likely to be a nonseasonal self-employed business person who hired employees and other services.

The households with children who needed care constituted 41.5% of the original homebased employed households. Of this group approximately 38% use child care and the rest did not. The highest percentage of child care was used by homebased workers with children 2 and 3 years old. Logit analysis was used to test the effects of worker, household, and work characteristics on the use of child care. See Table 1.

Several conclusions may be reached. First, it appears that homebased work is used as coping strategy to ease child care need. Secondly, it is also clear that homebased working households use child care and that it is not simply that Mom and Dad can just stay home to work and take care of children at the same time. Finally, there may be special child care needs of homebased working households, because they are more likely to be located in small town or rural areas or farms, and have long hours with interesting intermixes of work and family.

References

Beach, B. (1985) Working at Home: Family Life/Work-Life. Ph.D. dissertation, The University of Connecticut, Storrs.

Christensen, K. (1988) Women and Homebased Work: The Unspoken Contract. New York: Henry Holt and Company.

Horvath, F.W. (1986) Work at Home: New Findings From the Current Population Survey. Monthly Labor Review. 109(11), 31-35.

Pratt, J. (1984) Home Teleworking: Study of its Pioneer, Technological Forecasting and Social Change, 25(1), 1-14.

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Table 1:
Logit Estimates of the Research Variables Associated with the Likelihood of Using Child Care (by Homebased Households Who Have Children Who Need Care)

Variables	Coefficient[a] (standard error)	t-statistic
WORKER CHARACTERISTICS		
Males	0.37723 (0.00725)	52.04386***
Age	-0.08625 (0.00063)	-137.24438***
Years of education	0.02451 (0.00178)	13.73591***
Singles	0.52841 (0.01663)	31.78276***
HOUSEHOLD CHARACTERISTICS		
Total income (annual $)	0.00001532 (0.00000017)	89.39256***
Non-homeowners	-0.33772 (0.01138)	-29.67095***
Towns <2500, rural areas & farms	-0.07077 (0.00738)	-9.58831***
Years lived in community	0.00313 (0.00032)	9.270467***
Child < 1 year	-0.54685 (0.01333)	-41.02640***
Child 1 year	-0.97684 (0.01077)	-90.71171***
Child 2 years	0.69538 (0.01030)	67.49363***
Child 3 years	0.36604 (0.00970)	37.72563***
Child 4 years	0.01212 (0.00942)	1.28545
Child 5 years	-0.03211 (0.01033)	-3.10789***
Child 6 years	-0.35692 (0.00987)	-36.17447***
Child 7 to 8 years	0.23356 (0.00793)	29.45121***
Child 9 to 10 years	-0.00952 (0.00794)	-1.19838
Child 11 to 12 years	-0.79932 (0.01024)	-78.08387***
Child 13 to 14 years	-0.38329 (0.01132)	-33.86560***
WORK CHARACTERISTICS		
Years engaged in	-0.00508 (0.00079)	-6.44737***
Seasonal	-0.51422 (0.01158)	-44.42442***
Owns business	0.01190 (0.00819)	1.45250*
Hires employees, services	0.35918 (0.01649)	21.78625***
Occupational rank	-0.08254 (0.00167)	-49.71520***
CONSTANT	1.70003	44.64719***

Log-likelihood = -267,736.45

Chi square = 75,312.97***
Number of observations = 460,317[a]

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* Significant at .10 level
** Significant at .05 level
*** Significant at .01 level
[a] weighted

Home Based Work and Family Functioning

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Though most studies of why persons chose at-home-income-generation point to family life as the reason for this decision, there has been a lack of research on the effects of work on the life of the family. NE-167 used measures of family affective functioning to determine to what extent the family's functioning style impacts on the manner in which the family does income production tasks at home.

Owen and Gray (1985) found evidence that some at home businesses are appropriate to certain family stages and composition. How the family relates to the outside world, allocates rsources and controls information, called the family functioning paradigm (Constantine, 1986), appears to have important implications for how a family combines generating income and a satisfying family life under one roof.

Measurement of Family Functioning Types

NE-167 sought to provide measures of multiple family concepts and issues to obtain specific information on the family/work interface. Besides life cycle measures, demographics and life satisfaction measures, the project included measures of family management, intrusion and family functioning in the questionnaire. This paper is limited to the confirmatory factor analysis of family functioning scales. Within the project these are used to study the relationships among management and work activities and environments within at-home-income-generating families.

Issues which restricted the items used to measure family functioning were: telephone interview with no open ended questions; quick execution; passable discrimination and understandibility; and noninvasive. Kantor and Lehr's (1975) family systems theory, as adapted by Constantine (1986) formed the basic premise for the family scale used in NE-167. NE-167 uses three family types estimated to represent more than ninety percent of families. These are arrayed over five dimensions considered to be discriminating (among the family types) and least invasive. The dimensions of family life represented are time, space, pattern, decision making style and business "fit."

Table 1.
Selected Factor Loadings

FAMILY ITEMS	I	II
RANDOM TIME	.70	-.16
RANDOM DECISION	.81	.08
CLOSED TIME	-.32	.51
OPEN DECISON	-.72	.35
OPEN TIME	-.49	.48
OPEN PATTERN	.06	.69
RELIABILITY	.72	.69

Factor Analysis

Factor analysis of the family functioning scale suggests that there are five identifiable factors. Considering the statistical evidence and the theoretical constructs, three factors do identify family functioning styles. However, the reliability for teh closed family factor(.34), is too low for use. Thus two factors are reported here (Table 1). The first has high scores corresponding to a random family type; the second factor is a close reverse of the first and represents a combination of an open and closed family at high scores.

Underlying factor I are three dimensions of the random style. Factor II combines four open family dimensions. The resultant scores of these items will be used to measure the degree to which a family welcomes change and intrusion as family theme.

References

Constantine, L. L. (1986). Family paradigms: The practice of theory in family therapy. New York: Guilford.

Owen, A. J. & Gray, M. M. (1985). At home with business: How does your family fit? Presentation at ECOP Home Business Workshop, St. Louis. MO

Kantor D. & Lehr, W. (1975). Inside the family: Toward a theory of family process. New York: Harper Colophon.

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Consumer Choice Among Comprehensive Health Insurance Options

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Abstract

Health care choices of a random sample (n = 850) of employees were examined using Bashshur & Metzner's (1970) risk-vulnerability hypothesis and Engel, Blackwell, & Miniard's (1990) search model. The risk-vulnerability hypothesis was supported by multivariate analysis for HMO enrollment but not PPO enrollment. An expanded model produced mixed results. The search model provided a weak explanation of the amount of external search done by employers.

Introduction

In the United States, there has been an increased reliance on the market forces to contain health care costs. These market-based strategies include two broad approaches. The first approach concentrates on increasing competition. The second approach emphasizes cost sharing by increasing front-end deductibles and coinsurance to encourage consumer cost-sensitivity and provider price competition (Seidman 1980; Feldstein 1981).

One result of these efforts is that employers are offering employees revised, flexible, "innovative" health plans. Most employees must choose between at least two health care plans (Garland, Hoerr, Galen, Hawkins, DeGeorge, Mallory, and Levine 1989). Enrollees are assumed to select insurance plans in a rational manner, according to the best interest of themselves and their families (Schuttinga, Falik, and Steinwald 1986).

Purpose

The first goal of this research was to replicate studies concerning consumer decision-making when individuals are faced with several health insurance alternatives. Part A of Hypothesis One was a univariate analysis of the risk-vulnerability hypothesis, with the expectation that the risk-vulnerability hypothesis would be rejected. Part B of Hypothesis One was a multivariate analysis of the risk-vulnerability hypothesis using a slightly expanded equation. The second goal of the research study was to formulate a more comprehensive equation to provide a better explanation, than in Part B of Hypothesis One, of the enrollment decision. Hypothesis 3 was a test of the search component of the Engel, Blackwell, and Miniard (1990) model. It was hypothesized that the amount an enrollee searches for information in the context of choice of comprehensive health insurance could be predicted by the variables in the model.

Literature Review

It is presumed that individuals will rank the available options (perhaps implicitly) according to their own financial circumstances, expected need for medical care, uncertainty regarding medical expenditures, aversion to risk of financial loss, and their beliefs about medical practice (Schuttinga, Falik, and Steinwald 1986; Berki and Ashcraft 1980). When the choice includes health maintenance organizations (HMOs), the financial characteristics change. Traditionally, HMO premiums are higher, coverage is more extensive, and copayments for services are nominal. In addition, features of the delivery system are affected. HMO members are required to use plan physicians and facilities, and access to special care is controlled through a referral process. The family's attitude toward preferences for different delivery system characteristics now enter into the decision process (Berki and Ashcraft 1980).

Studies of enrollment choice attempt to determine individual and family characteristics that differentiate those who select an HMO from those who do not, and to differentiate between those who select a prepaid group practice or close-panel HMO and those who choose an individual practice association (IPA) or open-panel HMO (Berki and Ashcraft 1980).

There is a sizable body of literature on the correlates of the health insurance enrollment decision. Two excellent reviews of this literature have been offered by Acito (1978) and Berki and Ashcraft (1980). Most of this research has investigated determinants of choice in terms of services and cost (i.e., features) of the plans.

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Some of these efforts have employed the "risk-vulnerability hypothesis" first described by Bashshur and Metzner (1970) and elaborated upon by a number of other investigators (Bice 1975; Tessler and Mechanic 1975; Berki et al. 1978; Scitovsky, Mc Call, and Benham 1978; Juba, Lave, and Shaddy 1980; Grazier, Richardson, Martin, and Diehr 1986; Merrill, Jackson, and Reuter 1986; Welch and Frank 1986). The risk-vulnerability hypothesis consolidates economic and medical considerations to posit that those who feel themselves to be more vulnerable, either economically or medically, are the ones most likely to enroll in an HMO (Berki et al. 1978).

The evidence of the tenability of the risk-vulnerability hypothesis has been mixed (Berki et al. 1978). Some studies confirm that enrolles in HMO-type plans tend to be married, older, sicker, and higher users of health services (Metzner and Bashshur 1967; Moustafa, Hopkins, and Kline 1971). Other studies, however, find no support, equivocal support, or tend to contradict the hypothesis (Bice 1975; Tessler and Mechanic 1975; Berki et al. 1978; Juba, Lave, and Shaddy 1980; Merrill, Jackson, and Reuter 1986).

An extensive literature review identified additional variables which should provide a better explanation of the enrollment choice. Other variables found by researchers to be important in the enrollment decision were comprehensiveness of coverage, experience and satisfaction with previous plans, claims processing, propensity to use medical care services, and prepaid group plan market share.

The success of competition based cost-containment strategies hinges on the ability of consumers to make informed choices (Hibbard and Weeks 1987). A consumer orientation implies that health care users take an active role in assessing the relative cost and quality of alternative source of care, and make informed choices in the use of health services. Consumers must also choose the health insurance plan which will best meet their anticipated financial and health circumstances (Hibbard and Weeks 1988). When one assumes that consumers are making a rational decision, the decision process can be examined in the context of consumer behavior models.

Engel, Blackwell, and Miniard (1990) define problem solving as reasoned action undertaken to bring about a need satisfaction. The Extended Problem Solving process (an actively reasoned decision) is most likely to occur when there is high involvement, brand differentiation, and absence of time pressure. The EPS process proposed by Engel, Blackwell, and Miniard (1990) is composed of five phases, not necessarily followed in any precise order: 1) need recognition; 2) search for information; 3) alternative evaluation; 4) purchase/choice; and 5) outcomes.

Search for information, as defined by Engel, Blackwell, and Miniard (1990), is as follows: The consumer searches for information stored in memory (internal search) or acquires decision relevant information from the environment (external search). An indepth discussion of the search component can be found in the sixth edition of Consumer Behavior (Engel, Blackwell, and Miniard 1990).

According to Engel, Blackwell, and Miniard (1990), a variety of factors influence search. These factors include situational characteristics (i.e, availability and quantity of information in the marketplace, format of the information (Russo 1977; Russo, Kreiser, Myashita 1975), and time pressures (Beatty and Smith 1987; Moore and Lehmann 1980); marketplace characteristics (i.e., features of the product including product differentiation and stability of a product category); and consumer characteristics (knowledge, consumer involvement, consumer's attitudes toward shopping, consumer's belief toward perception of costs versus benefits of search, and demographic characteristics (i.e., age, income, education)).

Search for potential need satisfiers will occur following need recognition. If an internal search of memory provides a satisfactory solution to the consumption problem, then it will be unnecessary for consumers to seek information from their environment. Often, however, some degree of external search will be necessary. Just how much search behavior will occur varies across consumers and depends on a host of situational, marketplace, and consumer characteristics (Engel, Blackwell, and Miniard 1990).

Methodology

In April 1989, a random sample of two thousand employees of a large midwestern university were mailed a sixteen item questionnaire concerning their November, 1988 enrollment decision among four comprehensive health insurance plans. The options available included a self-insured fee-for-service plan, a preferred provider organization (PPO), and two health maintenance organizations (HMO). One thousand, three hundred and forty eight surveys were returned for a response rate of 67.4%. Eight hundred and fifty surveys had complete information for eligible respondents who enrolled in one of the health insurance plans resulting in a useable response rate of 42.55%. The sample was representative of the entire employee population based on job status. Of the 850 employees, 180 (21.2%) enrolled in the fee-for-service plan, 252 (29.6%) enrolled in the preferred provider organization, and 418 (49.2%) employees enrolled in one of the two health maintenance organizations.

Descriptive statistics were used to segment the three enrollee groups along sociodemographic variables and health-status indicators. In Part A of Hypothesis One, One-way Anovas were performed to determine if enrollees of the HMO's were significantly different from the fee-for-service or preferred provider enrollees in the vulnerability characteristics. Logistic regression was used in Part B of Hypothesis One and Hypothesis Two to accommodate dichotomous dependent variables and both continuous and categorical explanatory variables. The dependent variables in both Part B of Hypothesis One and Hypothesis Two were the probability of joining either an HMO, a fee-for-service, or a PPO. Multiple regression analysis was used to test the influence of the independent variables in predicting the dependent variable external search in Hypothesis Three.

Findings

Hypothesis One

Variables used to test Part A of Hypothesis One included four measures of health status, family income, and family life stage risk. Based on the univariate analysis used in testing Part A, the risk-vulnerability hypothesis set forth by Bashshur and Metzner (1970), was rejected. HMO enrollees reported themselves and their families healthier than fee-for-service enrollees on all four measures. And HMO enrollees reported lower income, inconsistent with Bashshur & Metzner's hypothesis. PPO enrollees were significantly different from HMO enrollees on only two of the six variables. They were more likely to report a chronic health condition and higher income than the HMO enrollees.

Whereas the univariate analysis rejected the risk-vulnerability hypothesis, the multivariate analysis (Part B, Hypothesis One) supported it. The model used in Part B can be found in Figure 1.

Figure 1. Model - Hypothesis One, Part B

Health Plan = f(health status and prior utilization, family life stage, education, relation to provider, access to care)

The multivariate testing of the risk-vulnerability hypothesis was found to provide a good explanation of the choice among the HMO enrollee group, with six of the twelve variables significant and in the expected direction. The model did not provide an adequate explanation of the PPO enrollee decision. Only two of the twelve variables were significant; both were measures of access.

Hypothesis Two

It was hypothesized that the model in Hypothesis Two would provide a better explanation of the choice when an employee is offered two or more health insurance options. Figure 2 shows the model used in testing Hypothesis Two.

Figure 2. Model - Hypothesis Two

Health Plan = f(health status and prior utilization, family income levels, family life stage, education, relation to provider, access to care, comprehensiveness of coverage, experience and satisfaction with source of care, claims processing, propensity to use medical care services, out-of-pocket costs, extended travel, dependents not living in the area)

Hypothesis Two was rejected for the HMO enrollee group. Although thirteen of the nineteen independent variables had the expected sign, most were not significant. Five variables were significant, but three of those had signs that were not as expected. Hypothesis Two was neither rejected nor accepted for the fee-for-service group, and was accepted for the PPO enrollee group. Nine of the nineteen signs on the beta coefficients were correct when predicting enrollment in the PPO; five variables were significant. The model used in testing Hypothesis Two gave a different explanation of the enrollment decision, not necessarily a better one.

Hypothesis Three

It was hypothesized that the amount an enrollee searches for external information in the context of health insurance choice could be predicted by the variables set forth in the search component of the Engel, Blackwell, and Miniard Model (1990).

Figure 3. Model - Hypothesis Three
Search = f(knowledge, product differentiation, product involvement, attitude toward shopping, stability of product category, age, income, education)

Hypothesis Three was rejected based on the fact that the regression equation accounted for only 22.86% of the variation in the dependent variable. A rule-of-thumb is that greater than 50% of the variance should be explained by the independent variables to have much confidence in the model (Brooks and Arnold 1985). Four of the eleven variables were statistically significant: internal search, perception of out-of-pocket costs, premium, and education.

Implications

For Research

Further research in the area of consumer choice among health insurance alternatives is needed, specifically those concerning choice of Preferred Provider Organizations. A better explanation of the PPO enrollee needs to be formulated. Along this line, a study which compares the PPO and HMO enrollee exclusively needs to be conducted. In the rapidly changing health care marketplace of the 1980's, the growth of PPOs is unparaleled (Gabel, Jajich-Toth, Williams, Loughran, and Haugh 1987). Enrollment grew from only 1.3 million Americans in health plans eligible to use PPO services in December, 1984 to 16.5 million in July, 1986 (Gabel, and Erman 1985; de Lissovoy, Rice, Gabel, and Gelzer 1987).

Although the sociodemographic characteristics were significant only for the HMO enrollee group in Part B of Hypothesis One, further research could segment the enrollees along different dimensions than the ones used in this study. Segmentation of the market by gender (male versus female), marital status (single versus married), or income (high versus low) may prove fruitful. Urban and rural measures may also be important given the significance of physical access in the present study.

Finally, a model needs to be designed which captures the essence of consumer behavior in a service-oriented area.

For Practitioners

The fact that the sociodemographic variables were not found to be significant in the logit equations has a huge impact on the way marketers need to segment their market in predicting enrollment. Although there were marked differences among the three groups (fee-for-service, HMO, and PPO) along these lines, other variables were more important in the decision(s). This demonstrates the need for industry and government health care plan designers to know the value potential enrollees place on various plan features and the way these enrollees gather and evaluate information in making their enrollment choice.

Mechanic (1989) states that the premise underlying the medical marketplace is that consumers make rational choices among alternatives. For this statement to be correct, employers need to transform employees into prudent purchasers of comprehensive health insurance plans. Stone (1986) states that educational programs need to 1) provide general knowledge about the economics of health care; 2) promote consumer responsibility for informed decision making self-care; 3) enhance patient-provider communication; 4) improve understanding of group health benefits and their cost management features; and 5) promote awareness of alternative delivery systems. Education is necessary to ensure the success of the regulatory and market-oriented options that have been proposed to control the rising cost of health care in the United States.

A public policy task force has proposed regaining control over United States national health care costs in a "distinctly American" fashion by restoring the power of health care consumers to choose among competing options in a free market economy (Knowles 1990). The task force states that if supply and demand and competitive forces allocate resources, the destiny of the health care system would be determined by consumer preference and individual choice. The data in this study have shown that consumer preference and individual choice in the context of comprehensive health insurance is a very complex phenomena. Different models yielded different explanations. Different statistical analyses yielded different results. Careful consideration is necessary by policymakers, marketers, and educators as they approach their policy, marketing, and education decisions.

References

Acito, F. (1978) Consumer Decision Making and Health Maintenance Organizations: A Review. Medical Care, 16, 1-13.

Bashshur, R.L. & Me-tzner, C.A. (1970) Vulnerability to Risk and Awareness of Dual Choice of Health Insurance Plans. Health Services Research, 5, 262-269.

Beatty, S.A. & Smith, S.M. (1987) External Search Effort: An Investigation Across Several Product Categories. Journal of Consumer Research, 14, 83-95.

Berki, S.E. & Ashcraft, M.L.F. (1980) HMO Enrollment: Who Joins What and Why: A Review of the Literature. Milbank Memorial Fund Quarterly/Health and Society, 58, 588-632.

Berki, S.E., Penchansky, R., Fortus, R.S., & Ashcraft, M. (1978) Enrollment Choices in Different Types of HMOs - A Multivariate Analysis. Medical Care, 16, 682-697.

Bice, T.W. (1975) Risk Vulnerability and Enrollment in a Prepaid Group Practice. Medical Care, 13, 698-703.

Brooks, J. & Arnold, G.C. (1985) Applied Regression Analysis and Experimental Design. N.Y., N.Y.: Marcell Dekker, Inc.

de Lissovoy, G., Rice, T., Gabel, J., & Gelzer, H. (1987) Preferred Provider Organizations: One Year Later. Inquiry, 24, 127-135.

Engel, J.F., Blackwell, R.D., & Miniard, P.W. (1990) Consumer Behavior (6th ed.). New York, New York: The Dryden Press.

Feldstein, M.S. (1981) Hospital Costs and Health Insurance. Cambridge, MA: Harvard University Press.

Gabel, J., Di Carlo, S., Fink, S., & de Lissovoy, G. (1989) Employer-Sponsored Health Insurance in America. Health Affairs, 8(2), 210-215.

Gabel, J., Jajich-Toth, C., de Lissovoy, G., Rice, T., & Cohen, H. (1988) The Changing World of Group Health Insurance. Health Affairs, 6(3), 46-60.

Gabel, J., Jajich-Toth, C., Williams, K., Loughran, S., & Haugh, K. (1987) The Commerical Health Insurance Industry in Transition. Health Affairs, 6(3), 46-60.

Gabel, J. & Ermann, D. (1985) Preferred Provider Organizations: Performance, Problems, & Promise. Health Affairs, 4, 24-40.

Garland, S.B., Hoerr, J., Galen, M., Hawkins, C., De George, G., Mallory, M., & Levine, J.B. (1989, November 20) What You Need to Know About "Enhanced Benefits". Business Week, pp. 118-122.

Garland, S.B., Hoerr, J., Galen, M., Hawkins, C., De George, G., Mallory, M., & Levine, J.B. (1989, November 20) "Ouch! The Squeeze on Your Health Benefits". Business Week, pp. 110-116.

Grazier, K.L., Richardson, W.C., Martin, D.P., & Diehr, P. (1986) Factors Affecting Choice of Health Care Plans. Health Services Research, 20, 659-682.

Hibbard, J.H. & Weeks, E.C. (1988) Consumers in a Competition-Based Cost Containment Environment. Journal of Public Health Policy, 9(2), 233-249.

Hibbard, J.H. Weeks, E.C. (1987) Consumerism in Health Care - Prevalence and Predictors. Medical Care, 25(11), 1019-1032.

Juba, D.A., Lave, J.R., & Shaddy, J. (1980) An Analysis of the Choice of Health Benefit Plans. Inquiry, 17, 62-71.

Mechanic, D. (1989) Consumer Choice Among Health Insurance Options. Health Affairs, 8(1), 138-148.

Merrill, J., Jackson, D., & Reuter, J. (1985) Factors that Affect the HMO Enrollment Decision: A Tale of Two Cities. Inquiry, 22, 388-395.

Metzner, C.A. & Bashshur, R.L. (1967) Factors Associated with Choice Of Health Care Plans. Journal of Health and Social Behavior, 4, 291-299.

Moore, W.L. & Lehmann, D.R. (1980) Individual Differences in Search Behavior for a Nondurable. Journal of Consumer Research, 7, 296-307.

Moustafa, A.T., Hopkins, C.E., & Klein, B. (1971) Determinants of Choice and Change of Health Insurance Plan. Medical Care, 9(1), 32-41.

Russo, J.E. (1977) The Value of Unit Price Information. Journal of Marketing Research, 14, 193-201.

Russo, J.E., Kreiser, G., & Mivashita, S. (1975) An Effective Display of Unit Price Information. Journal of Marketing, 39, 11-19.

Schuttinga, J.A., Falik, M., & Steinwald, B. (1985) Health Plan Selection in the Federal Employees Health Benefits Program. Journal of Health Politics, Policy, Law, 10(2), 119-139.

Scitovsky, A.A., McCall, N., & Benham, L. (1978) Factors Affecting the Choice Between Two Prepaid Plans. Medical Care, 16, 660-681.

Seidman, L.S. (1981) Consumer Choice Health Plan and the Patient Cost-Sharing Strategy: Can They be Reconciled? In M. Olson (Ed.), A New Approach to the Economics of Health Care (pp. 450-466), Washington, D.C.: American Enterprise Institute for Public Policy Research.

Stone, M.H. (1986) Transforming Employees into Prudent Purchaser. Business and health, 3(9), 36-40.

Tessler, R. & Mechanic, D. (1975) Factors Affecting the Choice Between Prepaid Group Practice and Alternative Insurance Programs. The Milbank Memorial Fund Quarterly/Health and Society, 53, 149-172.

Varner, T. & Christy, J. (1986) Consumer Information Needs in a Competitive Health Care Environment. Health Care Financing Review (Annual Supplement), 99-104.

Welch, W.P. & Frank, R.G. (1986) The Predictors of HMO Enrollee Populations: Results from a National Sample. Inquiry, 23, 16-22.

Household Credit Card Choice and Usage

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The purpose of this research is to study household credit card choice and usage behavior. The model for the credit card choice behavior is a discrete choice model under the assumption that the multiple aspects of credit cards influence the choice through three sequential steps. And the model for the credit card usage behavior was developed using a neoclassical intertemporal utility maximization framework under the assumption that with a credit card bundle owned the household faces a credit card choice decision for the different usages.

Introduction

Recent studies show that credit cards appear to be playing a greater role in consumer debts than they had previously. And, the number of credit cards held by each consumer, as well as, the number of consumers holding credit cards are increasing (Canner and Cyrnak 1985, 1986). The bank credit card industry has expanded rapidly in recent years, and it competes with non-bank general purpose cards such as retailer credit cards and travel-entertainment cards (T&E cards). The retailers solicit their own credit cards and provide revolving credits. The T&E cards were originally intended for use at the travel and entertainment oriented retailers, but are rapidly becoming more acceptable at a wide variety of stores.

This phenomenon has been accelerated by several factors. Credit card issuers have been lowering the standard of eligibility for ownership and marketing to a new segment of cardholders. Many states have joined in enacting legislation that bans surcharges on payments through credit cards. New legislation has been introduced in Congress to limit credit card interest rates and require issuers to prominently disclose card terms and conditions. This environment is very different from the credit card market in the 1970s.

Under these circumstances, consumers confront difficult decisions concerning credit cards: first, consumers need to choose the cards they will hold in their credit card portpolio, and second, consumers need to decide which card(s) in their credit card bundle will be the best choice for a particular purchase. Despite the growth of credit cards during the past two decades and the above decisions consumers confront, there has been relatively little effort devoted to the formal development of models of household credit card choice and isage activities.

Therefore, the objectives were the following: (1) to develop an economic model that identifies the determinants of the consumer's possession of an additional credit card and to estimate the size and direction of the effects of those factors, (2) to determine the factors influencing usage of credit cards relative to the characteristics of cards owned and purchases, and (3) to use the above results to critique credit card policy and to suggest future policy options.

Review of Literature

The following factors were hypothesized by previous researchers to affect credit card choice and holdings: bank accounts, residential area, attitude toward credit cards, mortgage or rent payments, installment debt, perceived price of card, income, occupation, race, sex, age, and employment status. Previous researchers have been consistent on documenting a positive relationship between the probability of holding credit cards and income (Curtin and Neubig 1979, 1980; Hirschman 1979; Mandell 1972; and Heck 1984), as well as with the level of education (Awh and Waters 1974; and Curtin and Neubig 1979, 1980).

The major limitations of this body of research are (1) inadquate measures of the dependent variable (=ownership) and (2) disregard for the role of the existing credit card bundle in influencing current credit card ownership. Generally, there are two kinds of measures of credit card ownership. First, researchers have used 'holding credit card or not' as the measure of credit card ownership

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(Mandell 1972; Russell 1975; Hirschman and Goldstucker 1978; and Heck 1984). Another measure is the total number of credit cards owned (Kinsey 1978; and McAlister and Kinsey 1979). The problem with the first measure is that it is not relevant any more since most families currently possess at least one credit card. The problem with the second measure is that researchers assumed that the characteristics of all credit cards are the same. Therefore, this study is unique in that it analyzed the probability of acquiring a new credit card with the control of expected convenience, perceived cost, and the existing credit card bundle.

For credit card usage, comparisions among different types of transaction vehicles were performed: user/nonuser of credit cards; active user/inactive user; installment/convenience user; and use of credit card/check. But, none of them consider the aspects of the type of purchase.

Theoretical Model

Credit Card Acquisition

Credit cards produce convenience by reducing transaction costs and facilitating transactions. They allow the household to buy goods without having funds available at the time of purchase and help to link purchasing and financing decisions. To obtain these benefits, households will pay some costs, such as membership fees and transaction fees. Thus, a household is confronted with the task of maximizing its utility from purchasing goods including credit cards and leisure subject to income and time constraints.

But, the continuous demand function from the conventional utility maximizing model which assumes that at the margin the utility from a good is the same cannot be used here. The utility from all types of credit cards is not same since credit cards are not homogeneous. Each credit card has distinguishable characteristics such as differences in membership fees, interest rates, and credit limits. These multiple aspects of credit card choice and multi-dimensional costs of credit cards influence the choice of credit cards. Thus, the demand for heterogeneous or qualitative goods such as credit cards is not only influenced by price but also by quality. To examine the utility from credit cards using the above perspective, the utility from each credit card is allowed to vary according to the characteristics of the credit card.

Also, credit card choice is to be seen as a three step process. The first step is the decision to acquire a card. The second step is the choice between types of cards, and the third step is the choice of a specific card in the type chosen. Suppose that a household has a set of characteristics, Z_i, that makes card acquisition more or less likely. The selection of card type depends upon a vector of factors Y_{ij}. And once a type of card has been selected, the individual will look into the options between different cards within card type. These are characterized by a vector X_{ijk}.

To capture the above structure more formally, we can model a card as having characteristics Q_{ijk}. Then we can think of household H as having a utility, V_{ijk} from card type Q_{ijk} of the form:

$$V^h_{ijk} = v\ (\ Q_{ijk},\ H\ )$$

This capture the utility of an individual expost, or in a world of perfect certainty. But, the credit card market is informationally imperfect due to limited accessability of information. This imperfect information may result in price and quality dispersion in the credit card market. With the existence of these imperfections and randomness, the stochastic indirect utility function is defined:

$$\begin{aligned} W^h_{ijk} &= V^h_{ijk} + \varepsilon_{ijk} \\ &= v\ (\ X^h_{ijk},\ Y^h_{ij},\ Z^h_i\ ) + \varepsilon_{ijk} \end{aligned}$$

where ε_{ijk} is a random term that captures the imperfections in perception and maximization. We can then think of the card that this household will select as C_{ijk}, where this is selected if it yields the greatest value of W_{ijk}. Therefore,

$$C^*_{ijk} = c\ (\ Q_{ijk},\ H,\ \varepsilon_{ijk}\ )$$

The utility maximization choice C^*_{ijk} depends on the characteristics of credit card from each decision-making step, the characteristics of the household, and ε_{ijk}, imperfection in maximization.

Credit Card Usage

The theoretical model to analyze credit card usage behavior is based within a neoclassical intertemporal utility maximization framework. Household decisions relating to the timing of purchases and choice of transaction vehicles involve many difficult and important choices. To choose an appropriate transaction vehicle, the household has to compare the opportunity costs and benefits of each available choice. In this

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research, the case that a credit card was chosen as transaction vehicle is considered, and it assumes that a household has a credit card bundle at least one credit card from each credit card group. The household faces different budget constraints for each alternative with respect to three credit card characteristics, grace period, credit line, and interest rate. Thus, the household will choose the credit card which maximizes its intertemporal utility which is depending upon the characteristics of credit cards and the household.

But, there are several sources of variation in credit card choice with regard to the characteristics of the credit card, the purchase, and the household. With the existence of these imperfections and randomness, a stochastic choice function is defined. Thus, a credit card choice for usage is depending upon the characteristics of a household's credit card bundle, the purchase and the household's characteristics as well as a residual imperfections.

Data and Empirical Model

Recent information on the attitudes and behavior of credit cardholders was available from the survey "Study of Consumer's Card Behavior and Preference" collected in 1986 by Pament System's Inc. This survey is a nationally representative sample of the United States, excluding income groups below $10,000 and consists of 1,495 valid mail surveys.

Since the data set does not contain a sufficient number of observations for each of the k's, the kind of credit cards in each credit card group, the third-level of decision-making in the credit card choice model cannot be empirically analyzed.

For credit card usage model, three different usage behaviors were specified, the card used most often, the card used for the greatest total dollar amount of charges, and the card used for travel outside the local area.

The dependent variables in both models have discrete values such as choosing a bank credit card, retail store card, or T&E card. The observed discrete values are just realizations of a process with probabilities varying from alternative to alternative. Thus, this study uses the multinomial logit model considered by McFadden (1982) for estimation among typical quantal choice models.

Variables

Credit Card Characteristics: Z_i is defined as the vector of explanatory variables which can distinguish people who will choose any credit card. It consist of two factors, the level of expected convenience from a credit card and the level of perceived cost of acquiring a credit card. They are measured by six attitude variables as seen in the table. And, Y_{ij} is the difference across credit card groups, and it consists of differences in membership fees and fianacial charges in each credit card group.

Household Characteristics: there are two kinds of household characteristics, demographic variables and credit card bundle. Demographic variables are: annual household income, family life cycle, home ownership, employment status, household education level, and market size of the residential area. Credit card bundle is measured by the number and types of credit cards that a household previously obtained.

Consumer Attitudes on Credit Cards: these variables can be theoretically justified as the residuals due to imperfections in preferences and maximization, and they are represented by six different factors: Convenience User, Multiple Credit Cards Holder, Cost Awareness, Information Overload, Brand Loyalty, and Card Indifference.

Analysis and Results

Credit Card Aquisition

To analyze the first-step of credit card choice behavior, a dichotomous logit analysis is chosen because the dependent variable has two categories of observations, choose/or not choose. To analyze the second step of credit card choice behavior, the probability of choosing each group of credit cards among those choosing any card is estimated by multinomial logit analysis.

The results of the logistic estimates of factors influencing the first credit card choice decision are shown in the Table 1. All three group of factors were significant.

Among household characteristics, the level of education and the household age had positive effects on the probability of choosing an additional card, but the size of the household influenced negatively. Those positive effects show the supply-side effect of the perceived credit worthiness of highly educated and older consumers.

Table 1
Multinomial Logit Analysis of Credit Card Choice: Choose or Not Choose

Number of Cases in each choice class:
= 2 if not choose 315
= 1 if choose 782

VARIABLES	BETA	T-STAT
Constant	0.865	1.713*
Household Characteristics		
Family Annual Income		
=1 if $20,000-$29,999	-0.084	-0.326
=1 if $30,000-$44,999	-0.022	-0.092
=1 if $45,000 & over	0.158	0.632
Household Designation		
=1 if married couple	0.069	0.277
Home Ownership		
=1 if own	0.108	0.513
Employment of Household		
=1 if two full-times	-0.073	-0.347
=1 if both retired	-0.003	-0.012
Education		
=1 if some college	0.355	2.016**
=1 if > college	0.500	2.451**
Market Size		
=1 if 50,000-499,999	0.345	1.553
=1 if 500,000-1,999,999	0.188	0.923
=1 if 2,000,000 & over	0.058	0.275
Size of Household	-0.131	-1.838*
Household Age		
=1 if 40=< age =<59	0.388	2.030**
=1 if 60 years & over	0.498	2.081**
Credit Card Bundle		
# of Bank C.C. held	0.325	3.929***
# of T&E C.C. held	0.885	4.061***
# of Store C.C. held	-0.059	-1.917*
Expected Convenience & Perceived Cost		
Not hesitate to apply out of state	-0.167	-1.500
Willing to pay more for higher credit limit	0.032	0.291
Can't evaluate which cards to apply	0.003	0.025
Credit card interest rate are too high	-0.038	-0.299
Annual fees are too high	0.189	1.571
Have had problems resolving errors	-0.378	-3.323***

Model Chi-Square = 110.408 with d.f.=24
Log Likelihood = -602.531

* significant at 0.10 with the critical value = 1.645
** significant at 0.05 with the critical value = 1.960
*** significant at .01 with the critical value = 2.576

Among the expected convenience and perceived cost variables, when the household had problems resolving errors in credit card statements, it would be less likely to obtain an additional credit card.

Among the credit card bundle, the number of bank credit card held and the T&E card held had positive effects, but the number of store card held had negative effects. When the number of total credit card held was used instead of these three variables, the probability of acquiring new credit card was positively related.

A positive income effect was expected because households with high time values would be most likely to have credit card in order to increase the marginal productivity of shopping time, but in this research the effect of income was insignificant.

The results of the effects of the variables on the probability of choosing a new card from each credit card group were derived by trichotomous multinomial logit as in Table 2. The parameters of the third case, that is, choosing store card, were normalized to zero, and BETA1 tells the effects of variables on the probability of choosing the first group of cards, that is, the bank credit card, for the next new card relative to the probability of choosing a store card.

The probability of choosing a bank card rather than a retail store card was affected by the level of family income, the household age, the number of bank card held, the number of store card held, the relative interest rate, the relative membership fee, and the card preference.

Surprisingly, only one variable, the relative membership fee, is statistically significant in influencing the probability of choosing a T&E card rather than a store card.

Credit Card Usage

As the first step, the logit analysis on the pooled sample of all three usages with usage dummy variables are done and reported in Table 3. The usage variables are statistically significant and show that the usage makes a difference in the probability of using T&E cards rather than bank credit cards. In addition to the usage variables, market size, attitude factors, and credit card bundle variables are statistically significant.

The probability of choosing T&E card as the most often used card was

Table 2
Multinomial Logit Analysis of Credit Card Group Choice

Number of cases in each choice class: =1 if bank c.c. chosen (562 cases); =2 if T&E c.c. chosen (56 cases); =3 if retail store c. chosen (116 cases)

VARIABLES	BETA1	T-STAT	BETA2	TSTAT
Constant	2.3653	2.2388**	-1.4733	-0.0413
Household Characteristics				
Family Annual Income				
= 1 if $20,000 - $29,999	-0.0251	-0.0549	-2.2550	-0.1145
= 1 if $30,000 - $44,999	1.0314	2.2716**	-2.7078	-0.2079
= 1 if $45,000 and over	0.5081	1.0714	-0.9892	-0.0743
Marriage (= 1 if married)	-0.4888	-1.0713	0.6250	0.0986
Home Ownership (= 1 if own)	0.1493	0.3815	4.5204	0.2663
Employment of Household				
= 1 if two full-times	-0.1076	-0.2836	-4.0871	-0.2019
= 1 if both retired	-0.0163	-0.0344	-9.3317	-1.0860
Education				
= 1 if some college	-0.0618	-0.1816	-0.7287	-0.0431
= 1 if > college graduate	-0.2605	-0.6759	5.1811	0.4038
Market Size				
= 1 if 50,000-499,999	0.2007	0.5123	-3.2396	-0.2160
= 1 if 500,000-1,999,999	0.5752	1.5423	-0.9816	-0.0615
= 1 if 2,000,000 and over	0.2862	0.7342	3.4857	0.2443
Size of Household	-0.0596	-0.4311	0.5155	0.1263
Household Age				
= 1 if 40=< age =< 59	0.9065	2.6344***	-2.4920	-0.1886
= 1 if 60 years and over	0.7340	1.6229	2.550	0.2805
Attitude Factors				
Convenience User	-0.0846	-0.2637	-6.0926	-0.4985
Multiple Cards Holder	0.3073	0.9997	-5.7818	-0.5111
Cost Awareness	0.0388	0.1375	-3.4621	-0.3282
Information Overload	-0.0080	-0.0243	-0.3606	-0.0357
Brand Loyalty	0.3688	1.3690	3.5958	0.5156
Card Preference	-0.7372	-2.6948***	-1.8516	-0.2343
Credit Card Bundle				
# of bank credit card held	0.3246	2.0085**	0.7883	0.2307
# of T&E credit card held	-0.1638	-0.6072	0.7324	0.1168
# of retail store card held	0.1644	2.6269***	1.6723	1.0679
Credit Card Characteristics				
Differences in Int. Rate	-0.2492	-8.8675***	-0.0308	-0.0486
Differences in Fee	0.0254	5.5995***	0.1440	2.8213***

Model Chi-Square = 611.16 with d.f. = 52; Log Likelihood = -202.58
Note: The parameters of the third category are normalized to zero.

* significant at 0.10 with the critical value = 1.645
** significant at 0.05 with the critical value = 1.960
*** significant at .01 with the critical value = 2.576

Table 3
Logit Analysis of Factors Influencing Credit Choice for Different Usages

Number of cases (N = 488):
= 0 if bank c.c. chosen (265)
= 1 if T&E c.c. chosen (223)

VARIABLES	BETA	P
Intercept	0.353	0.708
Family Annual Income		
=1 if $30,000-$44,999	0.108	0.809
=1 if $45,000 and over	0.645	0.131
Household Designation		
=1 if married couple	-0.369	0.144
Education		
=1 if some college	-0.407	0.251
=1 if > college	-0.005	0.989
Market Size		
=1 if 50,000-499,999	-0.864	0.055
=1 if 500,000-1,999,999	-0.105	0.801
=1 if >= 2,000,000	-0.235	0.539
Attitude Factors		
Convenience User	-0.244	0.348
Multiple Cards Holder	0.123	0.667
Cost Awareness	0.091	0.735
Card Preference	-0.429	0.097
Credit Card Bundle		
# of Bank c.c. held	-0.199	0.004
# of T&E c.c. held	0.360	0.062
Usages		
=1 if for BIGCHARGE	-0.037	0.881
=1 if for TRAVEL	2.154	0.000

Model Chi-Square = 123.88 with d.f.=16
P = 0.0000 R = 0.370

higher: when the number of T&E card held is bigger, and when the household does not know the actual interest rate. The probability of choosing T&E card for the biggest charges was influenced by whether the household knows the membership fee and the interest rate of credit card. The probability of choosing T&E cards for travelling was positively related with the level of income and the fact of whether the household knows the membership of card used, and it had a negative relationship with the card preference and the fact of whether the household knows the interest rates.

Different variables showed up as significant factors for three usages and the sizes of their effects were different also.

Conclusions and Implications

According to the above results, the following implications are made. The data used in this research were limited to the relatively high income consumers compared to the national sample, thus, this data limitation must be recognized by not over-generalizing the applicability of the estimates made.

In this research, the household who had experienced problems in resolving credit card billing errors was less willing to get another card. It means that more households would enjoy the benefits of credit cards, if those problems were prevented earlier. Thus, the consumer educators need to develop education packages to increase credit card management skills: 'How to be protected from credit card fraud,' or 'How to deal with an error in your credit card statement.'

The effect of the credit card bundle on the probability of choosing an additional card have interesting implications to the credit card marketing. In this research, the number of bank credit card held and the T&E card held have positive effects on the probability of choosing an additional card, while the number of store care held has a negative effect. It means that the acquirers of new additional credit cards are not new customers to the credit card market, but old and existing credit card customers. Thus, even when the credit card market is saturated such as now, there remain potential buyers of additional credit cards.

This research showed that the consumer decisions are influenced by the credit card characteristics. There were two significant choice-based characteristics for the choice of the credit card group, the membership fee and the interest rate. But, up to now, such information was disclosed after the application for a specific credit card was processed. Thus, it supports the enforcement of disclosure requirements on credit cards which have recently been revised in a few states. With early disclosure, the credit card information will be provided in time to be helpful to a household searching for a credit card best suited to its needs.

The following implications for future research are made. First, generally, positive relationship between income and the ownership of credit card was found. But, in this research, effects of income variables are insignificant. This means that although others find that the income variable affects ownership of credit cards, it may have little influences when the effect of credit card bundle is controlled for. Thus, the positive income effects often found could reflect the effect of the credit card bundle indirectly, and instead of the income variable, the credit card bundle should be emphasized in the future research. Second, it is not right to measure credit card holdings by the total number of credit cards owned, which was used typically. This research indicates that the total number of credit cards held, regardless to the kind of credit card, is an inaccurate measure, and the types of credit card owned influence the credit card decision differently.

In conclusion, through this research, the characteristics that distinguish credit card choosers and users were identified. Since credit cards represent a large and growing component of the whole economy, it will be important to do more research related to this study.

References

Alrdich, J.H. & Nelson, F.D. (1981) Linear Probability, Logit and Probit Models. Sage University Paper Series on Quantitative Applications in the Social Science, Beverly Hills: Sage Publications.

Awh, R.Y. & Waters, D. (1974) Discriminant analysis of economic, demographic, and attitudinal characteristics of bank charge-card holders: A case study. Journal of Finance, 29, 973-980.

Canner, C.B. & Cyrnak, A.W. (1986) Determinants of consumer credit card usage patterns. Journal of Retail Banking, 8, 9-18.

Canner, C.B. & Cyrnak, A.W. (1985) Recent developments in credit card holding and use patterns among u.s. families. Journal of Retail Banking, 7, 63-74.

Curtin, R.T. & Neubig, T.S. (1980) Changes in credit card use during 1978. Institute for Social Research Working Paper, 12.

Curtin, R.T. & Neubig, T.S. (1979) Credit card use among american households. Institute for Social Research Working Paper, 6.

Heck, R.K.Z. (1984) Determinants of credit card possession behavior: A test of differences among types of credit cards. Research Paper, 83-3, Cornell University.

Hirschman, E.C. (1979) Differences in consumer purchases behavior by credit card payment system. Journal of Consumer Research, 6, 58-66.

Hirschman, E.C. & Goldstucker, J.L. (1978) Bank credit card usage in department stores: An empirical investigation. Journal of Retailing, 54, 3-12.

Kinsey, J. (1978) Determinants of credit card accounts: An application of tobit analysis. Journal of Consumer Research, 8, 172-182.

Maddala, G.S. (1985) Limited-Dependent and Qualitative Variables in Econometrics. New York: Cambridge University Press.

Mandell, L. (1972) Credit Card Use in the United States. Ann Arbor: Institute for Social Research, The University of Michigan.

McAlister, R. & Kinsey, J. (1979) Impact on perceived costs and household characteristics on credit cards held. Proceedings of 25th Conference of American Council on Consumer Affairs, 166-178.

McFadden, D. (1982) Econometric models of probabilistic choice. Structural Analysis of Discrete Data: With Econometric Applications, Cambridge: M.I.T. Press.

Russell, T. (1975) The Economics of Bank Credit Cards. New York: Praeger.

Older Consumers and Pet Ownership

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This paper presents an empirical study of dog and cat ownership among households with heads 45 years old or older. Consumer choice is among household production frontiers. The empirical approach is multinomial logit. The analysis deals with older singles and older couples separately. There are general results, but some stereotypes fail to show in the results. There are definite species differences.

I. Objectives

This paper presents a large-scale empirical study of the ownership of dogs and cats among U.S. households with heads 45 years old or older and with no resident children less than 18 years old. The study uses an economic paradigm. While we cannot be sure that future older households will behave like those of today, we have no reason to believe they will be very different. Thus, the study yields some valuable lessons for anticipating the future of older persons and their pets.

II. Relevance of Pets to Older Consumers

Our discussion is confined to dogs and cats. These are the predominant "pet" or "companion" species, and they are of the greatest economic importance.

The research literature to date deals primarily with two general questions:

(1) In advanced, affluent, largely urbanized societies people choose to be intimately associated with animals. What are the benefits that people seek through this association? Why do we own pets?

(2) What can we learn about individuals, households, or the interactions among people from the ways they interact with pets? Research has taken a variety of approaches, including the biomedical. By far, however, the dominant approaches have been psychological, sociological, or some combination of those approaches. Few studies have included an economic perspective, and these have been entirely descriptive (for example, Franti, et al., 1980).[2]

One work of particular note is the monograph edited by Sussman (1985) which collects various research around its significance for our knowledge of pets and the family. A sampling of the literature suggests that pets are used to achieve some intangible benefit for consumers. Our discussion and model will incorporate this general presumption.

III. The Model and the Data

The theoretical model is that of household production from economics. From the vast household production literature, we point out only the seminal article by Becker and his subsequent book-length treatment (1965, 1981) and the consumer economics text treatment by Eastwood (1985, pp. 50-53). The essential features of the model are:

(1) The household is assumed to maximize its collective welfare through the choice whether to own dogs, cats, both, some other type of animal, or no animals.

(2) Pet ownership is taken to be a decision, while other aspects of the household like type of housing, the number of human household members, income, and work patterns are taken to be given or fixed in the period under consideration.

(3) The focus is on whether the household owns some combination of dogs and cats rather than how many pets of any type it owns.

(4) Pets are durable goods. This means that a cross-section of data, such as we have, cannot completely reflect the decision process of pet ownership in its time dimension. It can yield some useful insights.

Our empirical model is the multinomial logit formulation:

$$\mathrm{Prob}(j)= e^{XB_j} / (e^{XB_0}+e^{XB_1}+e^{XB_2}+e^{XB_3}+e^{XB_4})$$

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[2] An extensive bibliography is available from the author.

where X= a vector of household characteristics that are hypothesized to determine the choice of pet ownership and Bj is a vector of coefficients that reflect the importance of each variable to each category j. In the case we analyze, the household can fall into one of five categories: nonowners [j=0], owners of dog(s) but not cat(s) [j=1], owners of cat(s) but not dog(s) [j=2], owners of both dog(s) and cat(s) [j=3], or owners of some other pet animal but no dogs or cats [j=4]. Owners of both dogs and cats are called "dual owners."

The probability that a household will be in a specific category [j=i] is proportional to a weighted combination of variables describing that household, XBi, relative to the sum of weighted combinations of those variables for all categories (the denominator of the model). The variables describing the household are the same for each ownership category, but the weights attached to the variables depend on the category under consideration.

The model is implemented through maximum likelihood estimation of the weights, Bj, for each category, with the normalization B0=0 imposed. Thus, the model output comprises estimates of the B weights for the explanatory variables for all categories except the "base" category of nonowners.

Normalization of the model by B0=0 is necessary for estimation and loses no information. Since probabilities of the five ownership categories for each household must sum to one, there are only four independent probabilities. Setting B0=0 makes $e^{XB0}=1$. The relative odds of the other four categories to the nonowner category are given by the ratios $P(j=i)/P(j=0)=e^{XBi}/1$ for $i=1,2,3,4$. Multinomial logit estimates the B vectors for these relative odds equations. It is simple to calculate the estimated probabilities of all ownership categories for any household characteristics, X. Five probabilities are to be calculated. There are four equations for relative odds and one equation setting the sum of the five probabilities to one. The five equations give the five estimated probabilities.

The household explanatory variables used in this study were:

1. A constant.
2. Age of the household head.
3. Years of education of the household head.
4. Income per person in the household.
5. A dummy variable for small or moderately large metropolitan areas.
6. A dummy variable for very large metropolitan areas.
7. Total discretionary hours (hours not working, with an allowance for sleeping) of the household head and spouse, if present.
8. A dummy variable for renting the dwelling.
9. A dummy variable for living in an apartment or similar dwelling, which may be owned or rented.

The analysis is conducted separately for couples with a household head 45 years or older and single persons 45 or older. Only households with no members less than 18 years old are included, thus excluding the current acquisition of a pet for children.

When the couples are analyzed, variables are included for the number of persons in the household. When the older singles are analyzed, a dummy variable is included for males. The base group in either analysis owns and resides in a single-family dwelling in a nonmetropolitan area. Estimation was performed using the LIMDEP™ computer program by Bill Greene of NYU.

Data are from a cross-section sample of 20,000 U.S. households maintained on a panel by National Family Opinion. The survey was conducted in 1983, and 13,506 households responded. There were 4,391 households in the couples sample and 1,646 in the sample of older singles. For details, see Wise and Kushman (1985).

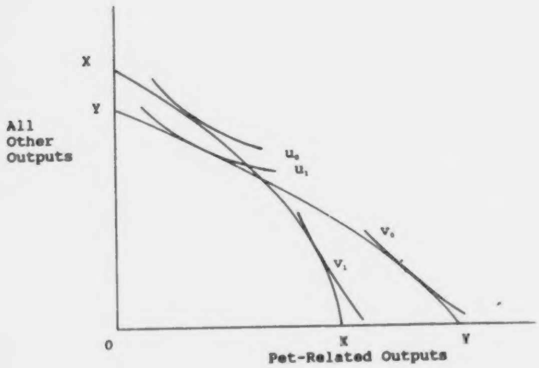
IV. Ownership as Discrete Choice of Household Production Possibilities

The household uses pets to produce such intangible benefits as companionship, social facilitation, and general attachment and dependency relationships. Figure 1 illustrates the connection between ownership and the multinomial logit model. Figure 1 is for the choice between owning a cat or owning a dog. The other three ownership categories in the empirical work are omitted for clarity in this illustration. Likewise, the discussion invokes stereotypes of dogs and cats and does not necessarily represent facts.

In Figure 1, assume that the household lives in an apartment.

Assume that XX is the production possibility frontier if it owns a cat, and that YY is the frontier if it owns a dog. The vertical intercept is lower on YY, because dog ownership requires larger expenditures of money and space just for maintenance. The dog eats more, requires more space indoors for sleeping, and must be taken for walks. Assume that the horizontal intercept of YY is farther right, because the dog produces more pet-related outputs (sociability, companionship, play) if the same, relatively large, amount of time and money is used with each pet.

Figure 1
Production Possibilities Frontiers and Indifference Curves for Households in Apartment-Type Dwellings



Indifference curves u_0 and u_1 are members of a family of indifference curves for apartment household C. This household is better off owning a cat rather than a dog. It chooses XX over YY in order to reach u_0. In contrast, apartment household D has indifference curves v_0 and v_1. Household D is better off with a dog and frontier YY. By choosing the dog, household D can reach indifference curve v_0. If there are many households, each with its own indifference map, the best description of all choices is the proportions of households taking each alternative. Another way to describe the proportions is the relative odds of dogs and cats being chosen.

If the households lived in detached single family homes, the choice proportions would be different. Indoor space for the dog will impinge less on space for other activities. Rather than being taken for regular walks, the dog may run loose in the yard. YY will shift up and out. These effects of a housing change will be less for a cat. XX will shift, but less than YY. Frontier YY will dominate XX over a larger range of pet and nonpet outputs. All households will find new optimal combinations of pet and nonpet outputs. More households will find their best combination on the dog production possibilities frontier. A higher proportion of households will choose to own a dog.

Drawing on gross stereotypes and only two ownership categories, Figure 1 illustrates discrete choices in pet ownership. Household choices depend on production constraints imposed by housing and other characteristics. These observable household characteristics are represented by our explanatory variables. Choices also depend on the distribution of indifference maps among households. This distribution is not directly observable. It is indirectly represented in the empirical model by the estimated odds of different ownership choices for given household characteristics.

Some of the variables in the model have relatively clear implications. Metropolitan residence, especially in very large metropolitan areas, is likely to be associated with less access to open spaces and lower pet ownership. Metropolitan residence is likely to have a greater impact on owning pets that require more outdoor space. Renting a dwelling or living in an apartment-type structure seems likely to be associated with lower rates of ownership because of physical and legal constraints. Again, the impacts are likely to be larger for pets that require more space or that produce more frictions with neighbors or landlords.

The potential implications of other variables, like income and education, for pet ownership are not so clear. We do not know enough about alternative opportunities to produce intangible benefits to predict relationships of these variables to pet ownership. For instance, as a person ages their ability to care for pets may decline, tending to reduce ownership overall, or the comparative advantage of pets as a source of intangible benefits may increase, tending to increase ownership. There is a general presumption that cats are less demanding and might be easier to maintain, but this is not known to be true, nor is it clear how "productive" cats are relative to dogs in terms of the intangibles. There is a general presumption that dogs are more companionable than cats, but one study found that dog and cat owners where equally attached to their pets (Voith

1985). On one hand, this could mean that dogs and cats are equally companionable. On the other hand, it could simply show that people in the Voith study had self-selected into those who bonded more readily with each species. Greater per-person income increases the "affordability" of pets, but it may have offsetting effects on the affordability of alternative means of achieving the intangibles. The relationships of ownership to most variables is unclear, and any relationships to the odds of various types of ownership are less clear. The household production model and the multinomial logit technique are, however, a useful way to conceptualize, estimate, and interpret the choice process.

V. Findings

Table 1 gives the multinomial logit coefficients for the various categories of ownership for couples 45 or older. The coefficients directly as relate the odds of a type of ownership to nonownership (the base group). It is possible to infer qualitative relationships between variables and the relative odds of various types of ownership directly from the signs and relative sizes of coefficients in the category equations. The logit formula above gives estimates of quantitative effects. A few findings are discussed here.

Table 1
Multinomial Logit Coefficients and T-Statistics For Older Couples
Ownership Category
Coefficient
(T-Statistic)

Variable	Dog Only	Cat Only	Dual	Other
Constant	2.737	-1.745	1.619	0.665
	(5.76)	(2.73)	(2.78)	(0.33)
Age of	-0.526	-0.005	-0.042	-0.074
Head	(9.73)	(0.62)	(6.41)	(3.34)
Years of	-0.019	0.084	0.002	-0.165
Education	(1.15)	(3.87)	(0.10)	(2.17)
Income Per	-0.001	-0.001	-0.002	-0.002
Person	(1.75)	(1.53)	(1.84)	(0.54)
Smaller	0.071	-0.117	-0.742	-0.002
Metro Area	(0.75)	(0.91)	(6.74)	(0.01)
Very Large	-0.102	-0.264	-0.979	0.552
Metro Area	(0.92)	(1.76)	(7.13)	(1.25)
Discretionary	-0.003	-0.006	-0.003	0.006
Hours	(2.65)	(4.40)	(2.32)	(1.09)
Persons in	0.287	0.292	0.416	0.346
Household	(4.13)	(3.08)	(5.19)	(1.41)
Renting	-0.404	-0.293	-0.210	0.740
Dwelling	(2.07)	(1.17)	(0.86)	(1.22)
Apartment-	-0.450	-0.150	-0.875	-0.303
Type Dwelling	(2.95)	(0.77)	(3.95)	(1.11)

The samples of older consumers are likely to have a carryover of pets that were acquired when children were present. This is an inevitable drawback of the cross-section nature of the data. It will bias coefficients of the age variable negatively. It also may bias the coefficient for number of persons in the household positively. Additional persons may be older children, which will correlate with past presence of children in the household.

Table 1 gives estimates of the logit model for ownership categories and older couples. Almost one-half of the older couples owned a dog or cat or both. In light of the probable negative bias on the age coefficient from "carryover" pets, it is striking that the cat-only coefficient on age is not significantly negative. The probabilities for dog or dual ownership did, however, decline with age in the sample. As age of the household head increased, the relative odds of cat-only ownership versus no pets show no significant change. The odds of cat-only ownership improved against ownership categories involving dogs.[3]

An example of the potential complexity of ownership effects is the relationships of ownership to discretionary hours. Discretionary hours are presumably required to enjoy the benefits of a pet in producing intangibles. Pet ownership might be higher among households with more discretionary hours. However, it was households with fewer discretionary hours that had higher probabilities of all types of dog and cat ownership. Perhaps pets are a way to intensify the enjoyment of discretionary hours.

Living in a metropolitan area was associated with a lower probability of dual ownership, but it did not have a statistically significant relationship with owning dogs or cats alone. This somewhat narrow impact of metro residence on ownership is surprising. It may indicate relatively successful accommodation to pet ownership. For instance, metro areas can plan in green space, and pet owners can choose breeds and species according to their neighborhood.

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[3] Interpreting the relative sizes of coefficients for a variable across equations requires a special assumption. That assumption is that the equations, excluding the term for the coefficients in question, have the same values. This is not equivalent to the assumption that the other variables have the same values in all equations, since the variables have different coefficients in the different equations. This context applies to all statements comparing coefficients across equations.

As expected, renting or living in an apartment-type dwelling relates negatively with pet ownership. Cat ownership was less sensitive than dog or dual ownership to the housing situation. This agrees with the stereotype that cats require less space and are less troublesome with neighbors and landlords than dogs. Such an explanation is, however, tentative.

The results for renting do not parallel those for apartment-type dwellings. Renting and dwelling type have sufficiently little correlation in the sample to estimate their effects separately. The coefficients suggest that renting is associated negatively with dog and cat ownership, but the only coefficient that is statistically significant is for "dog only." If landlords are more likely to prohibit dogs than cats, we also would expect a significant negative coefficient in the "dual" equation. There may have been too few cases in some categories to find this effect. Including an interaction term between dwelling type and rent/own also might specify the model better.

Table 2
Multinomial Logit Coefficients and T-Statistics For Older Singles
Ownership Category
Coefficient
(T-Statistic)

Variable	Dog Only	Cat Only	Dual	Other
Constant	3.769	0.089	1.912	-7.613
	(4.90)	(0.09)	(1.81)	(0.64)
Age of	-0.062	-0.030	-0.055	-0.086
Head	(5.72)	(2.25)	(3.66)	(2.25)
Years of	-0.062	0.085	-0.081	0.112
Education	(2.03)	(2.28)	(1.93)	(1.12)
Income	-0.001	-0.001	0.001	-0.006
Per Person	(1.12)	(0.53)	(0.91)	(1.55)
Smaller	-0.065	-0.153	0.162	6.616
Metro Area	(0.37)	(0.69)	(0.71)	(0.57)
Very Large	0.087	-0.204	-0.735	7.060
Metro Area	(0.43)	(0.78)	(2.14)	(0.60)
Discretionary	0.001	-0.008	0.008	0.016
Hours	(0.23)	(1.15)	(1.10)	(0.81)
Male	-0.162	-0.102	-0.672	-0.065
	(0.70)	(0.38)	(1.83)	(0.09)
Renting	-0.754	-0.786	-0.767	0.476
Dwelling	(3.15)	(2.47)	(2.14)	(0.67)
Apartment-	-0.612	-0.624	-0.724	-0.002
Type Dwelling	(2.86)	(2.21)	(2.33)	(0.01)

Table 2 gives the estimated coefficients for older singles. Less than one-third of older singles owned any pets. Older ages have a statistically significant negative relationship to all types of ownership. In view of the documented positive effects of pets on the morale of older persons, especially older singles, it would be useful to investigate the relative importance of voluntary versus involuntary (for instance, disability) factors in the decline of ownership with age. The relative size of the age coefficients indicates that cat ownership is least associated with age, but the direction of the relationship is still obviously negative. If this association of age and ownership is largely involuntary, some facilitation of ownership might be warranted. The relative advantage of cat ownership in this data suggests that dog owners might be assisted in a shift to cats, which may have an increasing comparative advantage at older ages.

There is a dramatic negative effect of renting and/or apartment-type dwellings among older singles on all categories of dog and cat ownership. The coefficients for renting and for apartment-type dwellings are large relative to those for most other dummy variables. Again, this magnitude suggests that it would be useful to investigate voluntary and involuntary factors.

Gender might be thought to relate to pet ownership, and the coefficients for "male" are negative in all equations. These coefficients suggest that males are less likely to own pets overall. However, none of the coefficients are statistically significant at 5% in the category equations. This suggests that gender differences are not present with regard to the type of pet owned when older singles are considered.

VI. Conclusions

The household production model provides a useful way to conceptualize the pet ownership decision. The conceptual framework relates directly to empirical discrete choice models in general and multinomial logit in particular. The empirical findings, when interpreted through the household production model, raise questions and suggest hypotheses that are directly relevant to policy.

By analyzing pet ownership by category, the present study makes it clear that all pets are not created equal. Research which treats "pets" as a generic commodity is likely to confound valid conclusions with regard to one species with inconclusive or opposing effects for another species. For instance, the results on years of education in this study are quite different for dog and cat ownership. The study also casts doubt on some stereotypes. It is usually thought that all dog and cat ownership is reduced by metropolitan residence. This study suggests otherwise for older households. There is a stereotype that older males are "dog people" while older females are "cat people." This may be true only in novels.

Finally, the decline of ownership with increases in age, residence in apartment-type dwellings, and renting deserve further investigation. Involuntary reductions in ownership and undesirably low levels of ownership may characterize older ages.

References

Becker, Gary (1965). "A Theory of the Allocation of Time". *Economic Journal*, *75*, 493-517.

----- (1981). *A treatise on the family*. Cambridge: Harvard University Press.

Eastwood, David (1985). *The economics of consumer behavior*. Boston: Allyn and Bacon.

Franti, C. E., *et al*. (1980), "Pet Ownership in Rural Northern California (El Dorado County)". *Journal of the American Veterinary Medical Association*, *176*(2, January), 143-149.

Sussman, Marvin B., ed. (1985), *Pets and the family*. New York: Haworth Press.

Voith, Victoria L. (1985), "Attachment of People to Companion Animals". *Veterinary Clinics of North America-Small Animal Practice*, *15*(2, March), 289-295.

Wise, J. Karl and John E. Kushman (August 1985), *US veterinary medical manpower study: demand and supply from 1980 to 2000*. Schaumburg, Illinois: American Veterinary Medical Association.

Infrequent and Seasonal Purchasing Behavior for Houseplants and Cut Flowers

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In this study, three limited dependent variables models--the Tobit, Cragg's double-hurdle and the purchasing infrequency model were specified, estimated, and their ability to explain the probability and magnitude of making houseplant and cut flower purchases compared. The results of the preferred models indicate that seasonality, monthly grocery expenditures, home ownership, education, and regional factors have significant impacts on houseplant and cut flower expenditures. Among holidays, Mother's Day most impacted houseplant and cut flower expenditures.

Introduction

Plants and flowers play an important part in the social and the aesthetic life of people. Seasonal factors are considered as a major determinant of households' purchasing patterns for flowers and plants. Within recent years, sales of houseplants and cut flowers have grown rapidly. According to the USDA Floriculture Crops 1988 Summary, the total wholesale value of sales for the reported crops (cut flowers, potted flowering plants and foliage) was 1.4 billion dollars in 1988. Recently, self-service supermarkets display flowers and plants so as to attract customer attention and consequently increase the purchases of flowers and plants.

The principal focus of this empirical analysis is to explain household expenditures for houseplants and cut flowers as a group. It is unlikely that the determinants of demand for each of these goods are identical. Cut flowers tend to be primarily purchased for special occasions (holidays, parties, weddings, anniversaries, funerals) and are typically perishable. Houseplants may also be purchased as gifts for certain occasions (Mother's day, Christmas, birthdays) yet they may be considered as semi-durable. In this regard they may be used by the purchaser as decorations for living quarters. To appropriately model demand for the aggregate of cut flowers and houseplants it is necessary to address the features relating to perishability, seasonality and purchasing patterns and purchaser characteristics for the separate categories. One common element is that both goods are typically purchased infrequently; though for cut flowers this can be more closely related to special occasions and for houseplants this feature may be more closely related to their durability.

A problem with this study is that the survey data shows that 90.68% of the households reported no expenditures on cut flowers and houseplants over the survey period. In this case, the Ordinary Least Squares regression method gives biased and inconsistent estimates (McDonald and Moffit 1980; Maddala 1983, p. 2; Cox, Ziemer, and Chavas 1984). For this reason, the Tobit and related models are often used to analyze this kind of problem. In order to obtain better explanations for the occurrence of zero expenditures and to improve model specification, the use of three limited dependent variables models--the Tobit, Cragg's double-hurdle and the purchasing infrequency model--was investigated.

The purpose of this study is to estimate the influence of seasonal factors, socioeconomic factors, and household characteristics on houseplant and cut flower expenditures, and to investigate how to econometrically model the large number of zero expenditures by households with special emphasis on how corner solutions, hurdles and infrequent purchasing affect model specification.

Model Specification

The Tobit Model

The Tobit model was originally developed by Tobin (1958). The Tobit model is a one-step decision method. In other words, it assumes that the decision to consume a certain good and the quantity to consume are decided at the same time. The Tobit model is defined as follows:

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$$
\begin{aligned}
y_i^* &= x\beta + \epsilon_i & \epsilon_i &\sim N(0, \sigma^2) \\
y_i &= y_i^* & &\text{if } y_i^* > 0 \\
&= 0 & &\text{otherwise} \qquad (1)
\end{aligned}
$$

where y_i is the ith individual household's observed expenditure on houseplants and cut flowers and y_i^* is the ith household's desired or optimal expenditure and can be the solution of the utility maximization subject to household budget. The vector x_i consists of explanatory variables, β is a vector of unknown coefficients, and ϵ_i is a vector of independently and normally distributed random variables with mean zero and variance σ^2.

Due to perishability, cut flowers purchased during the survey period are presumed to be consumed during this period. In the case of houseplants, consumption is ongoing since the aesthetic services of houseplants are not presumed to be short lived. Thus for the ith household it is known that if $y_i > 0$ then $y_i^* > 0$, however it is possible that $y_i = 0$ and $y_i^* > 0$ for houseplants purchased prior to the survey period. Finally it is presumed that if $y_i^* = 0$ then $y_i = 0$.

Given (1) the probability of zero observations ($y_i = 0$) is $P[y_i = 0] = 1 - \Phi_i$, where Φ_i is the distribution function of a standard normal random variable evaluated at $x\beta/\sigma$ (Maddala 1983, p. 152).

Then we can form the log-likelihood function as

$$
\begin{aligned}
\ln L_T = {}& \Sigma_0 \ln(1-\Phi(x\beta/\sigma)) + \\
& \Sigma_1[-\ln\sigma + \ln\phi((y_i - x\beta)/\sigma)] \qquad (2)
\end{aligned}
$$

where the summation Σ_0 is over the number of observations for which $y_i = 0$, the summation Σ_1 is over the number of observations for which $y_i > 0$, N_1 is the number of observations for which $y_i > 0$, and ϕ is the standard normal density function. The maximum likelihood estimates of σ^2 and β can be obtained by maximizing equation (2).

Cragg's Double-Hurdle Model

Cragg (1971) developed several generalizations of the Tobit model that allow the decision to consume and the quantity of the consumption to be separate but related consumption decisions by introducing a binary decision variable D_i (the "hurdle") that takes on the value 1 when $y_i > 0$. Assuming that the process generating D_i, say,

$$D_i = z\alpha + \omega_i \qquad \omega_i \sim N(0,1), \qquad (3)$$

is independent of y_i conditional on x_i then the probability of purchasing is given by $\Phi(z\alpha)$.

In Cragg's model, a decision D_i on whether to purchase has to be made first. Then a decision y_i^* on how much to purchase is made. This model requires that the "hurdle" $D_i > 0$ must be surpassed. Also, in this model, it is to assume that the observed variable follows a different distribution e.g. y_i is specified as log expenditure to restrict the value of y_i to non-negative levels.

$$\ln y_i = x\beta + \epsilon_i \qquad (4)$$

where ϵ_i is i.i.d., given that y_i is non-zero.

Hence, the probability that y_i is zero is the probability that D_i is non-positive:

$$P[y_i = 0] = P[D_i \leq 0] = 1 - \Phi(z\alpha) \qquad (5)$$

And the probability of y_i that is non-zero is given by

$$
\begin{aligned}
& P[D_i > 0] \cdot P[\ln y_i > 0] \\
& \quad = \Phi(z\alpha) \cdot \{1/(\sigma^2 2\pi)^{1/2}\} \cdot (y_i)^{-1} \\
& \quad\quad \exp\{-(1/2\sigma^2)(\ln y_i - x\beta)^2\} \qquad (6)
\end{aligned}
$$

Thus the log-likelihood function for Cragg's model is

$$
\begin{aligned}
\ln L_C = {}& \Sigma_0 \ln\{1-\Phi(z\alpha)\} + \\
& \Sigma_1\{\ln\phi((\ln y_i - x\beta)/\sigma) - \\
& \ln\sigma + \ln\Phi(z\alpha) - \ln y_i\} \qquad (7)
\end{aligned}
$$

The Purchasing Infrequency Model

The purchasing infrequency model is adopted from Blundell and Meghir (1987). They discussed several models that can be applied to a non-perishable commodity. Both the Tobit and Cragg's model assume that observed positive expenditures are identical to the unobserved consumption levels. But the purchasing infrequency model assumes that observed positive expenditure may not include the purchases outside the survey period or they misreport actual consumption. Since houseplants are likely to be consumed over longer periods than two weeks and the data are generated in a two week period, one can expect that the occurrence of numerous zero expenditures may result from infrequent purchases.

Again, define y_i to be the observed expenditures and y_i^* to be the unobserved consumption levels. Let $D_i(=z_i\alpha + \omega_i\ ;\ \omega_i \sim N(0,1))$ represent the ith household's decision to purchase. It is assumed that $D_i > 0$ if and only if $y_i > 0$, and let P_i be the probability of purchase. Also we assume $E[y_i] = E[y_i^*]$. Hence, it is assumed that $E[y_i] = E[y_i^*] = P_i \cdot E[y_i|D_i>0]$. P_i is less than unity and can represent a specific depreciation rate for the non-perishable. $E[y_i]$ implies that when observed expenditure is positive it will exceed the services consumed if $P_i < 1$. We rewrite the relationship between y_i and y_i^* as

$$P_i y_i = y_i^* + v_i \qquad (8)$$

where v_i represents the random discrepancies in the process linking the observable dependent variable y_i with the corresponding latent variable y_i^*.

In order to transform non-positive observations on y_i, y_i^* is specified as log dependent variable and is simplified as

$$\ln y_i^* = x\beta + e_i \qquad (9)$$

Under this specification, we rewrite the relationship between y_i and y_i^* as

$$y_i = (y_i^*/P_i) \cdot \exp(v_i) \qquad (10)$$

Then, defining $u_i = v_i + e_i$ and $P_i = \Phi(z_i\alpha)$ and given that

$$\ln y_i = x\beta - \ln\Phi(z_i\alpha) + u_i, \quad \text{for } y_i > 0 \qquad (11)$$

The log-likelihood function for the purchasing infrequency model is given by

$$\begin{aligned} \ln L_I = {} & \Sigma_0 \ln\{1-\Phi(z_i\alpha)\} + \Sigma_1\{\ln\phi((\ln y_i \\ & + \ln\Phi(z_i\alpha) - x\beta)/\sigma) - \ln\sigma \\ & + \ln\Phi(z_i\alpha) - \ln y_i\} \end{aligned} \qquad (12)$$

Model Selection Tests

Since the relationships among these three models are non-nested, this study applied Vuong's (1989) test to conduct the model selection tests. Vuong's tests are based on likelihood ratio (LR) statistics. Vuong proposed to test the null hypothesis that the competing models are equally close to the true data generating process against the alternative hypothesis that one model is closer.

Given two strictly non-nested models F_θ and G_γ (iff $F_\theta \cap G_\gamma = \emptyset$), the null hypothesis means that F_θ and G_γ are equivalent, where the statistic $(n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n)$ of the competing models is distributed as standard normal distribution.

Under 10% significant level, if the value of the statistic $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$ is higher than the positive critical value then one rejects the null hypothesis that the models are equivalent in favor of F_θ being better than G_γ. If $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$ is smaller than the negative critical value then one rejects the null hypothesis in favor of G_γ being better than F_θ.

The normalization $n^{1/2}\omega_n$ is obtained from the sum of squared deviations of $m_i = (\ln f(Y_i|X_i;\theta_n) - \ln g(Y_i|X_i;\gamma_n))$ from its sample mean which is equal to $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$. Vuong (1989) pointed out that $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$ is numerically equal to the usual t statistic on the coefficient of m_i in a linear regression of 1 on m_i.

The linear regression of m_i can be defined as

$$Z_i = m\delta + \mu_i \qquad (13)$$

where Z_i is a n X 1 vector of 1, m_i is the difference of ith maximum log-likelihood values between two models F_θ and G_γ, δ is a vector of unknown coefficient and μ is an error term. From the above regression, we can obtain the t statistic and the $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$ statistic. Then, we can test the hypothesis. Generally if m_i is equal to zero, then there is no difference between F_θ and G_γ. If m_i is significantly positive, then $\delta\ (=(m'm)^{-1}m'Z)$ also is significantly positive. One can conclude that F_θ is better than G_γ. Similarly, if m_i is significantly negative, then δ also is significantly negative. One can conclude that F_θ is worse than G_γ.

The Data

The present study used the data from the 1986 diary survey of the Consumer Expenditure Survey. About 8% of all households participated only one week. In this study, biweekly expenditures on houseplants and flowers were used rather than single weekly expenditures. In addition, those households which contained incomplete information such as missing value on monthly grocery expenditures and survey date were also deleted. The resulting sample consisted of 5384 households (observations). Of these, 4882 (90.68%) reported no houseplant and cut flower expenditures.

Household expenditure on houseplants and cut flowers served as

Table 1. Definition of Variables for CEX Data, 1986.

Variables	Mean	Definitions
Dependent variable	1.5300	Biweekly indoor plants and fresh flowers expenditures (in dollars)
Age	45.9170	Age of reference person (RP)
Family Size	2.6597	Numbers of members in the household
Monthly Grocery	287.6003	Monthly expenditure for grocery store
Occupation		
White Collar	0.2561	Omitted Base Group
Blue Collar	0.4662	= 1 if RP is a bluecollarite
Others	0.2777	= 1 if RP's occupation is armed forces, not working, retired, other (including not reported)
Education	0.7559	= 1 if reference person completed high school
Sex	0.6647	= 1 if reference person is male
Ownership	0.4016	= 1 if household owns the house
Region		
Rural	0.1231	Omitted base group
Northeast	0.1841	= 1 if household resides in the Northeastern urban areas
Midwest	0.2301	= 1 if household resides in the Midwestern urban areas
South	0.2402	= 1 if household resides in the Southern urban areas
West	0.2225	= 1 if household resides in the Western urban areas
Seasonal		
Ordinary Day	0.6888	Omitted base group (if household was surveyed during the week of other than the below holidays)
Valentine	0.0321	= 1 if household was surveyed during the week of Valentine's Day
Easter	0.0303	= 1 if household was surveyed during the week of Easter
Mother	0.0308	= 1 if household was surveyed during the week of Mother's Day
Memorial	0.0321	= 1 if household was surveyed during the week of Memorial Day
Winter Holidays	0.1859	= 1 if household was surveyed during the period from the week of Thanksgiving to the week of Christmas.

Source: U.S. Dept. of Labor, Bureau of Labor Statistics, 1986.

the dependent variable. The variables used to explain houseplants and cut flowers consumption included the monthly grocery expenditures, age, sex, family size, occupation, education, ownership of the house, region and holiday seasons. The dependent and explanatory variables are defined in Table 1.

In this study, monthly grocery expenditure was substituted for household income. Monthly grocery expenditure, in comparison to household income, provides a larger number of observations because many households did not report income.

Family size was introduced to consider the economies of scale. That means household preferences may be affected by the family size. The variable representing the educational level of the reference person was measured in two levels: education less than high school (including not completed high school) and education at least completed high school. The three classifications of race used were white, black and non-white/non-black. Five classifications of region were specified--Rural, Northeast, Midwest, South, West. As described before, the demand for plants and flowers is greatly seasonal. Hence, five holidays were selected: Valentine's Day, Easter, Mother's Day, Memorial Day, and Winter Holiday Season (Thanksgiving till Christmas).

Results

Presented in Table 2 are the results of the Tobit, Cragg's double-hurdle (Cragg's) and the purchasing infrequency (Infre) model. The GAUSS application program--MAXLIK was used to conduct the estimation. As mentioned above, in the Tobit model β reflects

Table 2. The Estimated Tobit, Cragg's Double-Hurdle, and the Purchasing Infrequency Model of Houseplants and Cut Flowers Expenditures.

Variable	Tobit	Cragg Double-Hurdle		Purchasing Infrequency	
	β_i	β_i	α_i	β_i	α_i
Constant	-98.510	1.824	-2.496	-2.634	-2.496
	(7.317)[a]	(0.353)	(0.167)	(0.464)	(0.165)
Age	2.299	0.008	0.056	0.104	0.057
	(0.696)	(0.039)	(0.018)	(0.050)	(0.018)
Family Size	0.844	0.059	0.025	-0.016	0.025
	(0.695)	(0.040)	(0.006)	(0.050)	(0.018)
Monthly Grocery	0.637	0.090	0.013	0.110	0.013
	(0.210)	(0.020)	(0.006)	(0.022)	(0.006)
Blue Collar	12.106	-0.001	0.328	0.564	0.328
	(2.965)	(0.156)	(0.077)	(0.208)	(0.076)
Other Occupations	3.344	-0.055	0.082	0.082	0.073
	(3.262)	(0.173)	(0.086)	(0.234)	(0.085)
Education	10.510	-0.141	0.288	0.399	0.284
	(2.719)	(0.157)	(0.071)	(0.206)	(0.070)
Sex	2.891	-0.022	0.072	0.103	0.070
	(2.192)	(0.119)	(0.057)	(0.156)	(0.057)
Ownership	7.439	0.223	0.193	0.104	0.190
	(2.057)	(0.106)	(0.054)	(0.140)	(0.054)
Northeast	10.119	0.414	0.218	0.789	0.212
	(3.725)	(0.203)	(0.097)	(0.268)	(0.096)
Midwest	10.158	0.047	0.257	0.503	0.268
	(3.595)	(0.193)	(0.093)	(0.255)	(0.092)
South	3.254	0.321	0.031	0.389	0.037
	(3.676)	(0.204)	(0.095)	(0.271)	(0.095)
West	9.459	0.135	0.206	0.512	0.215
	(3.609)	(0.196)	(0.093)	(0.259)	(0.093)
Valentine	9.855	0.305	0.234	0.658	0.214
	(4.895)	(0.244)	(0.130)	(0.320)	(0.130)
Easter	16.723	-0.062	0.455	0.709	0.467
	(4.739)	(0.221)	(0.125)	(0.286)	(0.124)
Mother	25.343	0.308	0.661	1.307	0.667
	(4.304)	(0.187)	(0.115)	(0.238)	(0.113)
Memorial	16.239	-0.075	0.489	0.701	0.117
	(4.514)	(0.205)	(0.118)	(0.265)	(0.482)
Winter Holidays	3.703	0.022	0.081	0.170	0.079
	(2.447)	(0.129)	(0.064)	(0.170)	(0.064)
Sigma	38.782	1.073		1.072	
	(1.443)	(0.034)		(0.034)	
Log Likelihood	-3065.865	-2966.369		-2965.617	

\a Standard errors are in parentheses.

the decision of whether to consume a certain good and the quantity to consume. In contrast, in the Cragg's double-hurdle models the decision of whether to purchase is captured in α, and the decision of how much to purchase is captured in β. About the purchasing infrequency model, α reflects the probability of infrequent purchases and β embodies the decision of how much to consume.

As described before, the Tobit model is a one-step decision method. Tobit censoring is controlled through the term $\Phi(x\beta/\sigma)$ such that if all households consume y_i^* then the probability of zero observations is negligible. And Cragg proposed that if the "hurdle", $D_i = z\alpha + \omega_i$; $\omega_i \sim N(0, 1)$, is independent of y_i conditional on x_i then the probability of purchasing is given by $\Phi(z\alpha)$. In the purchasing infrequency model, we define that P_i represents a specific depreciation rate. If it is specified that $P_i = \Phi(z\alpha)$, then the specification is restrictive in the sense that the depreciation rate is equated to the probability of observing a purchase.

Model Selection Tests

Given the results in the Table 2, comparisons among non-nested models were developed. First, using Vuong's test to compare the Tobit model with the Cragg's and Infre model t statistic values -4.19236 and -4.23026 were obtained, respectively. From the calculated t statistic values, we can conclude that the Tobit model is worse than the Cragg's and Infre model.

Finally, we compared the remaining two models. The results (t statistic value = -0.60015) showed that two models (Cragg's and Infre) can not be discriminated from each other. From the above test results and the comparisons, we concluded that the Cragg's model and the purchasing infrequency model are the better models in terms of representing the data generating processes than the Tobit model.

Parameter Estimates

In the following, we concentrate on two preferred models to analyze the parameter estimates.

The results of the models (Cragg's and Infre model) are presented in Table 2. In Table 2, all the signs of the α coefficients are positive with the exception of the constant variable. But the signs of the β coefficients are not uniform in two models. For Cragg's model, a decision on whether to purchase first has to be decided. In Cragg's model, the significant coefficients include those for the age, family size, monthly grocery expenditure, blue collar occupations, education, ownership of the house, Northeast region, Midwest region, West region, Valentine's Day, Easter, Mother's day, and Memorial Day. Households' reference person who are blue collar occupation, high school graduates, own their house, larger family, Midwest resident, and higher monthly grocery expenditure tend to have a stronger purchasing intention on houseplants and cut flowers than others. The positive and significant monthly grocery expenditure coefficient is consistent with the expectation that households with higher monthly grocery expenditures tend to buy, and are likely to purchase more houseplants and cut flowers than those having lower monthly grocery expenditures. The α estimates for sex indicates that sex does not significantly affect the intention of purchasing houseplants and cut flowers. The α estimates for the regional dummy variables show that, relative to households located on rural areas, households located on urban areas are more likely to purchase, especially in the Northeast and Midwest areas. Seasonal factors are also very important determinants of houseplant and cut flower expenditures. The α estimates for seasonal dummy variables indicate that households buy houseplants and cut flowers at the holidays. Particularly during the Mother's Day, Memorial Day and Easter Day periods, households tend to be more likely to make a purchase. With regard to β estimates, the β estimates indicate that those households with higher monthly grocery expenditure, house ownership, Northeast locations and surveyed on the Mother's Day, tend to spend significantly more on houseplants and cut flowers than others.

The estimates for the Infre model are also shown in Table 2. In the Infre model, the significant coefficients include those for age, monthly grocery expenditure, blue collar occupations, education, ownership of the house, Northeast region, Midwest region, West region, Easter, and Mother's day. Households' reference person who are blue collar occupation, high school graduates, own a house in the Midwest, and having higher monthly grocery expenditure, tend to have a stronger purchasing probability on houseplants and cut flowers than others. As described before, seasonal factors are very important determinants of houseplant and cut flower expenditures. Particularly during the Mother's Day and Easter periods, households tend to be more likely to purchase houseplants and cut flowers. With regard to β estimates, the β estimates indicate that those households with older people, higher monthly grocery expenditure, ownership, in the Northeast and on the Mother's Day tend to spend significantly more on houseplants and cut flowers than others.

The results suggested that (1) the determinants of the decision of whether to consume and the decision of how much to purchase are often not the same, (2) the monthly grocery expenditure, education, ownership of the house, urban areas, and seasonal factors, especially on the Mother's Day and Ester, play an important and significant role to the household's consumption behavior relative to expenditures on houseplants and cut flowers.

Summary and Conclusions

After conducting the tests, the results suggested Cragg's and the purchasing infrequency models as being more consistent with the data generating process. Parameter estimates obtained from these two models were used to analyze the expected values and the elasticities of the explanatory variables.

The results of the preferred models indicate that monthly grocery expenditures, ownership of the house, education, region, and seasonal factors have significant impacts on houseplant and cut flower expenditures. Among holidays, Mother's Day did most impact houseplant and cut flower expenditures.

This study suggests that the Tobit method is not suitable to analyze expenditure patterns for the composite category of houseplants and cut flowers. Results found in this study suggest that it is important to consider the effects of the corner solutions, hurdles and purchase infrequency in modeling household expenditures for these items.

References

Amemiya, T. (1973) Regression analysis when the dependent variable is truncated normal. *Econometrica*, *41*, 997-1016.

__________ (1984) Tobit models: a survey. *Journal of Econometrics*, *24*, 3-61.

Blundell, R. & Meghir C. (1987) Bivariate alternatives to the tobit model. *Journal of Econometrics*, *34*, 179-200.

Brown, A. & Deaton A. (1972) Surveys in applied economics, models of consumer behavior. *Economic Journal*, *82*, 1145-236.

Capps, O., Jr. & Love J.M. (1983) Determinants of household expenditure on fresh vegetables. *Southern Journal of Agricultural Economics*, *15*(2), 127-32.

Chiang, Fu-Sung (1990) Determinants of household expenditure on houseplants and flowers: the tobit and related models approach. *unpublished M.S. thesis*, University of Florida.

Cox, T.L., Ziemer R.F. & Chavas Jean-Paul (1984) Household demand for fresh potatoes: a disaggregated cross-sectional analysis. *Western Journal of Agricultural Economics*, *9*(1), 41-57.

Cragg, J.G. (1971) Some statistical models for limited dependent variables with applications to the demand for durable goods. *Econometrica*, *39*, 829-44.

Deaton, A. & Irish M. (1984) Statistical models for zero expenditures in household budgets. *Journal of Public Economics*, *23*, 59-80.

Dennis, W.J. (1986) Determinants of household consumption of fresh citrus: an application of the tobit model. *unpublished M.S. thesis*, University of Florida.

Haines, P.S., Guilkey D.K., & Popkin B.M. (1988) Modeling food consumption decisions as a two-step process. *American Journal of Agricultural Economics*, *70*, 543-52.

Judge, G.G., Hill R.C., Griffiths W.E., Lutkepohl H., & Lee T.C. (1988) *Introduction to the theory and practice of econometrics*. New York: John Wiley & Sons.

Lee, L.F. & Maddla G.S. (1985) The common structure of tests for selectivity bias, serial correlation, heroscedasticity and non-normality in the tobit model. *International Economic Review*, *26*, 1-20.

Lin, T.F. & Schmidt P. (1984) A test of the tobit specification against an alternative suggested by Cragg. *Review of Economics and Statistics*, *66*, 174-77.

Maddala, G.S. (1983) *Limited-dependent and qualitative variables in econometrics*. Cambridge: Cambridge University Press.

McDonald, J.F. & Moffit R.A. (1980) The uses of tobit analysis. *Review of Economics and Statistics*, *62*, 318-21.

Nelson, F.D. (1981) A test for misspecification in the censored-normal model. *Econometrica*, *49*, 1317-29.

Phlips, L. (1974) *Applied consumption analysis*. Amsterdam: North-Holland.

Prais, S.J., & Houthakker H.S. (1971) *Analysis of family budgets*. Cambridge: Cambridge University Press, Second Edition.

Reynolds, A. (1989) An econometric analysis of fresh-winter vegetable consumption: extensions of the tobit model. *unpublished Ph.D. dissertation*, University of Florida.

Salathe, L.E. (1979) The effects of changes in population characteristics on consumption of selected foods. *American Journal of Agricultural Economics*, *61*, 1036-45.

Tobin, J. (1958) Estimation of relationships for limited dependent variables. *Econometrica*, *26*, 24-36.

U.S. Department of Agriculture, *Floriculture crops 1988 summary*. Washington, D.C.: Agricultural Statistics Board, 1989.

U.S. Department of Labor, Bureau of Labor Statistics, *Consumer expenditure survey: (interview survey/diary survey)*. Washington, D.C.: Government Printing Office, 1986.

Vuong, Q.H. (1989) Likelihood ratio tests for model selection and non-nested hypotheses. *Econometrica*, *57*, 307-33.

Measuring Consumer Risk Perception of Pesticide Residues in Fresh Product

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The study analyzes consumer risk perception about pesticide residues in fresh produce by using household survey data. Consumer risk perception was measured by a Likert attitude scaling procedure. A two-limit Tobit model was used to investigate impacts of various exogenous variables on consumers' risk perception. The study concludes that consumers' risk perception about pesticide residues differs with respect to a number of factors and is not as negative as it is generally believed.

A National Academy of Sciences study on Environmental Protection Agency's (EPA) food regulation in 1987 revealed that many widely used pesticides have potential to cause cancer, and made startlingly high estimates of the potential cancer risks from 28 pesticide residues in fresh produce (Greene & Zepp, 1989). Then in early 1989 the two most widely publicized food safety incidents occurred: the case of Alar on apples, and the Chilean grape tampering scare. According to the Food Marketing Institute's (FMI) annual survey of consumer attitudes about supermarkets and food shopping concerns, more than 73 percent of the respondents consistently express apprehension over pesticide residues during the last six years. A 1988 survey conducted by the University of Florida in cooperation with ERS found out that pesticide residues are the most serious concern, followed by bacteria and additives (Smallwood, 1989). Similarly, in a national survey of adults taken by NEWSWEEK magazine in early 1989, 70 percent said fewer pesticides and chemicals should be used even if higher prices resulted. Obviously, consumers are increasingly concerned about pesticide residues in the food supply and want government to treat it as a high priority issue for ensuring the safety of the fresh food supply.

Responding to consumers' pesticide concerns, the government has empowered both EPA and FDA with new rules and methods to augment their ongoing regulatory and monitoring procedures. Several food safety legislation have been amended and many new bills have been introduced in the Congress in order to tighten the regulatory and monitoring procedures. These measures seek to provide sufficient and accurate information to the consumers, to foster dockside testing and private residue testing at retail, to bar use of certain controversial farm chemicals, and to encourage production of organically grown produce. An important aspect of the food safety issues dealing with how consumers perceive risk associated with chemical pesticide residues, however, has received little attention.

The purpose of this paper is to analyze consumers' responses to the use of pesticides in fresh produce production. More specifically, the study measures consumers' perception of risk about pesticide residues in fresh produce and examines the impacts of several hypothesized exogenous variables on consumers' risk perception. In what follows, the conceptual framework of the empirical approach is discussed first. The results of a consumer survey are reported next. A technique similar to Likert attitude scaling procedure is then used to measure consumers' risk perception about pesticide residues. Finally, a two-limit Tobit model is developed and estimated econometrically to quantify the impacts of several exogenous variables on consumers' risk perception.

The Conceptual Approach

Risk involved with pesticide residues in fresh produce is not only determined by the science of risk assessment but also influenced, to a great extent, by public perceptions. It is, therefore, important to assess not only how concerned the consumers are, but also how much health risk people would tolerate before it would influence their consumption habits. Previous research has indicated that perceptions and attitudes have an important influence on individual purchase strategies and decisions. Alexis and Wilson (1967) emphasized the importance of consumer perception along with problem recognition, search for perception and other food related health risks, four relative health concern questions were asked. If health risk involved with foods high in fats, sugar, salt, and cholesterol were ranked to be much lower or somewhat lower than pesticide residues in food, consumer's risk perception about pesticide residues was evaluated to be very high. No difference (between health risk of pesticide residues and fats, sugar, salt, and cholesterol), somewhat higher, and much higher health risks concern (for fats, sugar, salt, and cholesterol relative to pesticide residues) correspond to moderate, low, and no risk perceptions, respectively. The remaining question was an opinion statement concerning the use of man-made pesticides in growing fresh produce. A consumer suggesting to ban all pesticide uses, to ban some while imposing restrictions on the remaining pesticides, to increase testing and certification, and to do nothing was considered to possess high, moderate, low, and no pesticide risk perceptions, respectively.

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In terms of item scores, "high risk" received 3 points, "moderate risk" received 2 points, "low risk" received 1 point, and "no risk" received 0 point. In calculating the total scale score for each respondent, item scores were summed. Since the highest possible score is 18, a score closer to 18 would be interpreted as a high risk perception. A moderate risk perception would result in a score close to 12, close to 6 for low risk perception, and close to zero for no risk perception.

It is important for all the above items to be measuring the same underlying variable (the psychological construct). Therefore, a reliability test of the risk perception scale was performed using an internal-consistency Cronbach alpha coefficient (α) (Kuder & Richardson, 1937; Cronbach, 1951). The reliability test is given by:

$$\alpha = (k/k-1) \times (1-\Sigma s_i^2/s_t^2)$$

Where, k is the number of test items, s_t^2 is the variance of total test scores, and s_i^2 is the variance of responses to the ith test item. As Muller (1986) explains, alpha treats each item as an alternate test form and establishes the consistency of measurement across forms. The resulting α coefficient for the constructed risk perception was .78, suggesting that the pool of questions used to measure are indeed measuring the same underlying psychological construct of risk perception 78 percent of the times.

The constructed risk perception scale indicates that less than one percent of the respondents from the panel perceive pesticide residues in fresh produce to pose no health risk. Approximately 36 percent of the respondents perceive riskiness of pesticide residues to be low and another 42 percent perceive it be moderate. Only about 22 percent perceive pesticide residues in fresh produce to be highly risky. This result indicates that Georgia consumers' risk perception about pesticide residues in fresh produce may not be as negative as various other consumer surveys seem to suggest.

Two-Limit Tobit Analysis

Estimation of the chemical pesticides risk perception model involves a dependent variable with observations limited at both high and low values necessitating the use of Two-Limit Tobit analysis (Maddala, 1983). The model underlying the Two-Limit Tobit analysis may be expressed as:

$$y_i^* = \beta X_i + u_i$$

Where y_i^* is the latent variable. If we denote by y_i the observed dependent variable,

$$\begin{aligned} y_i &= L_{1i} && \text{if} \quad y_i \le L_{1i} \\ &= y_i^* && \text{if} \quad L_{1i} < y_i^* < L_{2i} \\ &= L_{2i} && \text{if} \quad y_i^* \le L_{2i} \end{aligned}$$

Here L_{1i} and L_{2i} are, respectively, the lower and upper limits. The β coefficients are estimated by the method of maximum likelihood which assumes normality of the disturbance term.

The Empirical Model

Socioeconomic and demographic variables have long been recognized as crucial determinant factors in the analysis of consumer food purchasing decisions. Given that perception is a psychological construct, it is postulated that the socioeconomic and sociodemographic factors have influences on consumers' attitudes and perception as well.

To test the hypothesis that needs, motives, past experiences, mental readiness, ability to gathering and processing information, socioeconomic, and sociodemographic characteristics have an effect on consumers' risk perception, the following relationship is specified:

Table 1
Characteristics of Surveyed Households.

Items	European Origin	Afro. Origin	Spanish Origin	Other	Total
			percent		
SEX					
Male	24.8	5.7	0.5	0.8	31.8
Female	52.4	14.7	0.8	0.3	68.2
INCOME					
Less than 5,000	1.9	3.2	0.0	0.0	5.1
5,000-14,999	13.8	5.4	0.3	0.0	19.5
15,000-24,999	15.3	5.6	0.0	0.0	20.9
25,000-34,999	14.6	2.2	0.8	0.3	17.9
35,000 or more	32.0	3.5	0.3	0.8	36.6
AGE-GROUP (YRS)					
Less than 25	5.2	2.0	0.0	0.3	7.5
26-35	16.8	5.4	0.3	0.5	23.0
36-45	19.1	4.6	0.3	0.3	24.3
46-65	24.3	6.4	0.8	0.0	31.5
More than 65	11.9	1.8	0.0	0.0	13.7
HOUSEHOLD SIZE					
1 Person	17.3	5.7	0.3	0.0	23.3
2-4 Persons	52.4	11.9	1.0	0.8	66.1
5 or more	7.5	2.8	0.0	0.3	10.6
MARITAL STATUS					
Marries	52.5	8.4	0.5	1.1	62.5
Divorced/Sep.	7.6	4.8	0.5	0.0	12.9
Widowed	9.2	1.9	0.3	0.0	11.4
Single	8.4	4.8	0.0	0.0	13.2
RESIDENCE					
City	38.9	15.6	0.6	0.5	55.6
Non-city	38.1	5.0	0.8	0.5	44.4
EDUCATION (YRS)					
Up to 12	36.9	10.8	0.3	0.6	48.6
13-16	29.7	7.2	0.6	0.3	37.8
More than 16	11.9	0.8	0.6	0.3	13.6

A pool of six questions were used to quantify consumers' risk perception about pesticide residues. One survey question pertained to consumers' top three absolute food risk concerns. If foods grown using man-made pesticides was perceived as the number one, two, or three concern then consumers risk perception about pesticide residues was weighed to be high, moderate, or low, respectively. If foods grown using pesticides was not one of the top three concerns, no risk perception about pesticide residues was assumed. To facilitate a direct comparison between consumers' pesticide residues risk information, information evaluation, and post-purchase evaluation in consumer decision-making process. Also, consumers' perceptions can significantly influence policy making because they are significant determinants of preferences for various public policies and behavioral responses (Lankford, 1985; Gould, Saupe & Klemme, 1989). Fisher (1985) suggested that public perceptions would be at least as important as predictions derived from economic theories.

While there is no total consensus among social scientists regarding the definition of perception, there is a substantial agreement among scientists that perception means becoming aware in one's mind - to understand and apprehend. Perceptions reflect an individual's subjective mental construct and, hence, they are dynamic in nature and can change significantly over time. Each individual's perception is greatly influenced by his internal as well as external determinants. Internal determinants such as needs, motives, past experiences, mental readiness, and information gathering and processing ability are some of the crucial factors affecting individual's perception. Equally important are the external or environmental determinants such as cultural, social and economic influences.

In terms of recent consumer risk perception about pesticide residues in fresh produce, it was assumed that there has been no change in consumers' needs or motives, i.e., consumers still desire a bountiful supply of safe, wholesome and nutritious fresh produce. But, recent widespread anti-chemical publicity may have induced a change in public perceptions concerning the riskiness of pesticide residues in fresh produce. This perception might have been further influenced by an individual's mental readiness, information gathering and processing ability, cultural, social and economic background.

The Household Food Safety Survey

During the spring of 1989 a mail survey entitled, "Preferences and buying habits of fresh produce in Georgia" was conducted among 580 households which participated in the Georgia Consumer Panel. The purpose of the survey was to assess and determine consumers' risk perceptions concerning use of pesticides in the production of fresh produce. The survey design and procedure followed the total design method recommended by Dillman (1979) to minimize nonresponse bias. The survey resulted in 389 returned questionnaires which represents a response rate of 67 percent. In the survey, panel members were asked a variety of questions concerning their fresh produce purchasing practices including factors that influence their purchase decisions, overall satisfaction with the quality of fresh produce available in the market, and their absolute concern for pesticide residues as well as relative to other health related food concerns.

Socioeconomic characteristics of the survey sample are given in Table 1. The sample tended to be demographically upscale with older, better educated, and higher income consumers slightly overrepresented in comparison to census statistics. The average household size is about 2.7 persons. Though the racial composition of the state is approximately 73% white (Georgia Statistical Abstract 1989-1990), whites represented 77% of the surveyed households.

Consumer Perception of Risk

Perception is a psychological and hypothetical construct that cannot be observed or measured directly. Therefore, it is necessary to construct consumers' risk perception scale by drawing inferences about their mental status and mental processes. As suggested by various methods of assessing psychological constructs, high reliability is achieved if multiple items rather than a single item are used in constructing a scale. Specifically, a single question regarding consumers' perception of pesticides use may not be able to measure their perception as adequately as a pool of questions relating to the subject (Muller, 1986; Kalton & Schuman, 1982). Furthermore, Muller (1986) points out that respondents usually evaluate the attitudinal objects within a relative context. Therefore, judgement of riskiness of chemical pesticides relative to the riskiness of other food items will help consumers to convey their perceptions more accurately. In this study, the procedure used to measure consumers' perception of risk about chemical residues in fresh produce is very similar to the Likert Attitude Scaling procedure.

PRP = f (RACE, URB, SEX, AGE, AGE^2, EDSCH, EDCOL, EDGRAD, AGE x EDU, IN1, IN2, IN3, CHILD5, CHILD12, SENIOR, SATISFY, UP, INFO)

Where,

PRP = risk perception scale divided by 18.

RACE = 1 for European origin, 0 otherwise.

URB = 1 for household living in an urban area, 0 otherwise.

SEX = 1 for male respondent, 0 otherwise.

AGE = age of the respondent in years.

AGE^2 = age of the respondent in years to the power of 2.

EDSCH = 1 for the respondent with less than or equal to 12 years of education, 0 otherwise.

EDCOL = 1 for the respondent with greater than 12 years but less than or equal to 16 years of education, 0 otherwise.

EDGRAD = 1 for the respondent with greater than 16 years of education, 0 otherwise.

AGExEDU = age of the respondent in years multiplied by education of the respondent in years.

IN1 = 1 for household annual income less than $25,000, 0 otherwise.

IN2 = 1 for household annual income greater than or equal to $25,000 but less than $35,000, 0 otherwise.

IN3 = 1 for household annual income greater than or equal to $35,000, 0 otherwise.

CHILD5 = 1 for household with children less than or equal to 5 years of age, 0 otherwise.

CHILD12 = 1 for household with children greater than 5 years of age but less than or equal to 12 years of age, 0 otherwise.

SENIOR = 1 for household with senior citizens (older than 65 years), 0 otherwise.

SATISFY = overall quality rating of the fresh fruits and vegetables bought in the past, 3 for very good, 2 for good, 1 for fair, and 0 for poor

UP = 1 for household who has used chemical pesticides in home garden, 0 otherwise.

INFO = 1 for respondent aware of the fact that even organically grown fresh produce may contain detectable pesticide residues, 0 otherwise.

The dependent variable was constructed by dividing the risk perception scale by the highest possible scale (18). The independent variables related to socioeconomic and demographic factors are observed on a binary basis except AGE, AGE^2, and AGE x EDU which were specified as continuous variables. Other environmental factors such as use of pesticides in home garden (UP) and past perception of the quality of fresh fruits and vegetables (SATISFY), were hypothesized to capture the effect of consumer's first hand experience with pesticides and post-purchase evaluation of the quality of fresh fruits and vegetables. In addition, available information regarding pesticide residues in fresh produce and individual's interpretation of the information are also expected to affect consumers' risk perception. Although the survey did not specifically measure this information variable, the respondents' awareness of the fact that even organically grown fresh produce may contain detectable pesticide residues was used as a proxy measure. No a priori expectations with regard to the sign and magnitude of the estimated coefficients were postulated due to lack of knowledge pertaining to consumers' risk perception regarding pesticide residues in fresh produce. Descriptive statistics of variables used in the Two-Limit Tobit model are given in Table 2.

Empirical Results and Discussion

As was indicated earlier, consumers formulate their perception from needs, motives, past experience, and available information in addition to personal characteristics, social and cultural background. The influences of these factors on risk perception with regard to use of chemical pesticides in fresh produce were estimated by Two-Limit Tobit analysis. The estimated coefficients, asymptotic t-ratios and their level of significance are presented in Table 3. Most of the socioeconomic and sociodemographic variables included in model are statistically significantly different from zero at the .15 significance level or less.

Table 2
Descriptive Statistics of Variables Used in the Two-Limit Tobit Analysis.

Variable	Mean	Standard Deviation	Min	Max
Risk Perception	.491	.234	0	1
Race	.804	.398	0	1
Urban	.536	.500	0	1
Sex	.352	.479	0	1
Age	42.772	13.773	18	80
Age^2	2018.400	1314.333	324	6400
Edsch	.444	.498	0	1
Edcol	.404	.492	0	1
Edgrad	.152	.359	0	1
Age* Education	571.480	197.060	90	1600
Income1	.384	.486	0	1
Income2	.184	.388	0	1
Income3	.432	.496	0	1
Child5	.164	.371	0	1
Child12	.240	.428	0	1
Senior	.112	.316	0	1
Satisfy	1.900	.610	0	3
Use pesticides	.256	.437	0	1
Info	.488	.501	0	1

Table 3
Statistics for Two-Limit Tobit Analysis of Consumers' Risk Perception About Pesticide Residues in Fresh Produce.

Variable	β	T-ratio	Level of Significance
RACE	.0696	1.775	0.076
URB	.0337	1.133	0.257
SEX	-.0406	-1.406	0.159
AGE	.0139	1.739	0.082
AGE^2	-.0001	-1.594	0.111
EDSCH	-.110	-1.663	0.096
EDCOL	-.077	-1.588	0.112
AGE*EDU	-.0001	-0.595	0.552
IN2	-.0831	-1.959	0.050
IN3	-.0694	-1.869	0.063
CHILD5	.0796	1.892	0.058
CHILD12	.0484	1.342	0.180
SENIOR	-.0882	-1.410	0.158
SATISFY	-.0034	0.141	0.888
UP	-.0383	-1.119	0.263
INFO	-.0350	-1.178	0.239
CONSTANT	.2939	1.750	0.080

Sample Size: 250
Wald Statistic: 1259.47

Results of this study indicate that consumers of European origin perceive the pesticide risk to be significantly higher than consumers of other races (Afro-Americans, Hispanic, and others). Male respondents and households with senior citizens have lower risk perception than female respondents and households without senior citizens. The results suggest that lower educational level tends to decrease the respondents' risk perception. The impact of differences in education level on risk perception are found to be statistically significant. Individuals with less than or equal to 12 years of education have lowest risk perception followed by individuals with more than 12 years but less than or equal to 16 years of education. Risk perception on the use of chemical pesticides in fresh produce is found to be the highest among individuals with more than 16 years of education. With respect to age, it was found that risk perception of respondents increases at a decreasing rate with the increase of age and reaches its maximum roughly at the age of 63[3]. This implies that, for consumers older than 63 years of age, risk perception of pesticide residues actually decreases with the increase of age. Although not statistically significant, the estimated coefficient for UP suggests that respondents who have used pesticides in their home garden perceive riskiness of chemical pesticides to be less than those who have no home gardens or have not used pesticides in their home gardens. Households with annual income less than $25,000 were found to perceive riskiness of chemical pesticides much higher than households with greater than or equal to $35,000 annual income. This is possibly because households in the higher income group consider organically grown produce, although expensive, to be a feasible alternative to conventionally produced fresh produce.

The presence of children less than 6 years of age was found to significantly increase consumers' risk perception about pesticides use in fresh produce. Increasing concern for children's health tend to explain these relationships. The variable, "INFO" was found to be negatively associated with pesticides risk perception. Although not statistically significant, this tends to support some of the scientists' view that lack of information and misinformation about pesticides use in fresh produce has contributed to increasing consumer risk perception about pesticide residues in fresh produce.

Conclusions

A hypothesis concerning consumers' risk perception about pesticide residues in fresh produce was gathered from a survey conducted among participating members of a consumer panel in Georgia. Risk perception about pesticide residues in fresh produce was measured with the construction of a Likert scale. Impacts of various socioeconomic, demographic and environmental variables on risk perception were estimated from a Two-Limit Tobit model.

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[3] Computed at the mean of education in years.

Based on the constructed risk perception scale, the study found that less than one fourth of the total respondents considered pesticide residues in fresh produce to be highly risky. The results also indicate that risk perception about pesticide residues differ significantly with respect to a number of factors. Notably, presence of children appears to increase consumers' risk perception of pesticide residues. Different levels of income and differences in household composition also contribute significantly to differences in risk perception.

The results of this study provide a basis for policy makers to evaluate and assess the impacts on risk perception due to differences in income and education levels among households with different socioeconomic profiles. Specifically, if effective consumer information/education programs are designed to correct information failure, different impacts of demographic and economic characteristics should be given due consideration. This study also provides an adaptation and an application of specific theoretical and statistical models to a consumer perception problem.

References

Alexis, M. & Wilson, C. Z. (1967) *Organizational Decision Making*. Englewood Cliffs, N.J.: Prentice-Hall.

Cronbach, L. S. (1951) Coefficient alpha and the internal structure of tests. *Psychometrica*. *16*,297-334.

Dillman, D. (1979) *Mail and Telephone Surveys: The Total Design Method*. New York: John Wiley and Sons.

Fisher, R. C. (1985) Taxes and expenditures in the U.S.: Public opinion surveys and incidence analysis compared. *Economic Inquiry*. *23*,525-550.

Gould, B. W., Saupe, W. E. & Klemme, R. M. (1989) Conservation tillage: The role of farm and operator characteristics and the perception of soil erosion. *Land Economics*. *65*,167-182.

Greene, C. & Zepp, G. (1989) Changing pesticides regulations: A promise for safer produce. *National Food Review*. *12*,12-16.

Kalton, G. & Schuman, H. (1982) The effects of the question on survey responses: A review. *Journal of Royal Statistical Society*. *145*,42-73.

Kennedy, D. (1988) Humans in the chemical decision chain. In H. O. Carter and C. F. Nuckton (Ed.), *Chemicals in the Human Food Chain: Sources, Options and Public Policy, 17-18*. Agricultural Issues Center, University of California, Davis.

Kiplinger Agriculture Letter (1989) June 2.

Kuder, G. F. & Richardson, M. W. (1937) The theory of the estimators of test reliability. *Psychometrica*. *2*,151-60.

Lankford, R. H. (1985) Preferences of citizens for public expenditures on elementary and secondary Education. *Journal of Econometrics*. *27*,1-20.

Maddala, G. S. (1983) Limited-dependent and qualitative variables in econometrics. New York: Cambridge University Press.

Muller, D. J. (1986) *Measuring Social Attitudes: A Handbook for Researchers and Practitioners*. New York: Teachers College Press, Columbia University.

Roberts, T. & Van Ravensway, E. (1989) The economics of food safety. *National Food Review*. *12*,1-8.

Smallwood, D. (1989) Consumer demand safer foods. *National Food Review*. *12*,9-11.

University of Georgia (1989-1990) Division of Research. *Georgia Statistical Abstract*.

Family Resource Management in Developing Countries: Future Directions

Jean W. Bauer, University of Minnesota[1]
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This roundtable was designed to stimulate discussion about experiences using family resource management curriculum in developing countries. The facilitators provided information and shared support materials developed for a training they conducted as Technical Assistance Faculty to an USAID supported program at the University of West Indies, St. Augustine, Trinidad. Participants shared and raised issues for the development of materials in the future. Research needs were also raised.

Introduction

The roundtable facilitators shared with the group their experiences of training and preparing teaching materials developed to work with educators (frontline officers) in 8 east Caribbean states and Trinidad. The Home and Farm Management Program was a portion of the Agricultural Research and Extension Project for the east Caribbean states of Antiqua, Dominica, Grenada, Monserrat, St. Christopher/Nevis, St. Lucia, and St. Vincent and the Grenadines, and was sponsored by U.S. Agency for International Development.

The program was aimed at integrating the Home and Farm Management concepts and processes for persons who were working with the farmers and farm families. Challenges of preparing materials when the subject matter does not exist in the University providing support for the program were shared. Additional challenges expressed by the facilitators were the types of learning activities that were needed to assist the educators to use the concepts in working with the farmers. The need to be sensitive to cultural differences in management practices were expressed by many roundtable participants.

Issues Discussed

Many of the roundtable participants are being requested to assist in international education for developing countries, even though many have not been trained to work in these countries. How can we support each other in the development of concepts that are appropriate to assist others in relevant decisionmaking processes and other management concepts? How are the examples for learning derived given that we know our models are limited by our middle class culture of the U.S.?

Research is needed to assist in the future development of culturally relevant models to use in working internationally. Linking research with program development is clearly crucial. Helping others to learn about families they work with and/or the marketplaces is an asset that we can contribute to the total process.

Roundtable participants agreed that at issue is the development of appropriate materials to work in our filed in international settings. Sharing what is being done is vital and opportunities for collaboration and communication need to be increased. The facilitators shared that the USAID has an Request For Proposal for the Family and Development Initiative which will involve family resources in economic and social development programs. This is a change in the direction for the USAID program and provides more opportunities to help in developing nations.

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Consumer Economic Graduate Study in the United States: Foreign Graduate Students' Perspectives

Robin A. Douthitt, University of Wisconsin, Madison[1]

Graduate students participating in the round table discussion include: Rajai Qusus, Ph.D., Jordan, OSU; Jinkook Lee, Ph.D., Korea, OSU; Karen Duncan, Ph.D., Canada, OSU; Yu-Chun Regina Chang, Ph.D., Taiwan, OSU; Xiaojing Fan, Ph.D., China, OSU; Jing-Jian Xias, Ph.D., China, Oregon State Univ.; Kefan Zhang, Ph.D., China, Univ. of Missouri, Columbia; Noriyuki, Nakano, M.S., Japan, Univ. of WI.-Madison; Carmen Andrades-Gary, Ph.D., Puerto Rico, The Ohio State University.

Most students undergraduate backgrounds were in areas of applied economics. A major reason cited by students for studying in the United States is to learn the most advanced research and statistical methods. Most students came to the United States open to learning about American families and consumers, thus they were not disappointed that other country specific behavioral theories were not covered. However, there was a sentiment expressed that more courses should be taught from a global perspective. Many students would have welcomed more personal contact with faculty immediately following their arrival in the U.S. About half of the students expected to return to their home countries to work. All agreed that ACCI conferences should afford a place and time on the program for foreign students to meet.

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Undergraduates Doing Research in Courses: Possibilities and Pitfalls

Hilary Wang, University of New Hampshire[1]
Elizabeth Dolan, University of New Hampshire[2]

The following incorporates discussion and suggestions made by the round table participants.

Factors to Consider

A. Students don't believe the amount of time and energy research takes. Early deadlines are critical.

B. For group projects, the size of the group should be kept small -- 2 or 3 students per group. Students may find it difficult to coordinate their schedules to work on the project. Fewer students in the group result in fewer complications.

C. Having students replicate research gives the neophyte researchers much needed help in getting started. The instructor can identify studies from journals, proceedings or national surveys (e.g., CFA or Harris Associates) which provide a lot of information on the methodology used, questions asked, etc. The students have a base upon which to start their review of literature and how to collect the data. Give students ample choices of projects -- perhaps twice as many projects as groups.

For a single class project, students can write short papers suggesting topics, methodologies, etc. The instructor then can make the final decision on topic, methodology, etc. from those suggested.

D. Human subjects review of the projects may be necessary. The process can be facilitated through a departmental review committee for student projects.

E. Group projects require frequent meetings with students outside of class at all stages of the process. This also requires a great deal of the instructor's time.

F. Data analysis may be the most difficult part for the students, and require the most input by the instructor. With group projects, each group can work with the instructor to plan and execute the analyses. Or, taking the entire class to a computer center for a "mass" data entry and analysis session also works. With a single class project, the analysis options and interpretation of the data can be a class discussion. Even students who have had a statistics course may find difficulty in interpreting the findings.

G. Students working in groups should present their findings to the class. With a single class project, the class can discuss the findings and results as a whole. A discussion of "what should we do next time" is often beneficial.

H. Encourage the students working in groups to hand in drafts of their write-up for comments at each stage of development. Some students find it difficult; the idea of using the instructor's comments to help improve their final product is quite foreign.

Each student in a group can submit a short paper summarizing his/her participation, and what s/he learned about research. Students perceive this as a way of letting the instructor know how hard they worked, and for making recommendations based on their own experiences. A final summary paper/ project abstract by each student also works well with a single class project.

What Is Learned

1. Students will not realize how much effort goes into a research project until they have completed one. And then they will complain that the instructor should have forced them to get started earlier! Although it is hard work, it is also interesting and exciting. They have a sense of real accomplishment.

2. Students have a new respect for those who do research and publish the results. They discover that it is not always easy to explain what you have done and what you have found, and to forget to explain some factor is easy.

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Consumer Protection and The European Community

Monroe Friedman, Eastern Michigan University[1]

With 1992 signaling the opening of a single market for the 12 nations comprising the European Community (EC), it is appropriate to consider the current status of consumer protection in the EC and its likely future course. Given the limitations of time and space we briefly note some organizational characteristics of the EC and highlight some consumer policy initiatives.

The organization of the EC is large and complex, with six main units. Three of the six, corresponding roughly to the executive, legislative, and judicial branches of the American federal government are, respectively, the Commission, the Council of Ministers, and the Court of Justice.

EC consumer policy initiatives in the last 20 years include the following:

1. The establishment of the Environmental and Consumer Protection Service in the Commission. In 1989 the consumer arm of this government unit was given autonomous status, as the Consumer Policy Service.
2. The launching of the Consumers' Consultative Committee (CCC) consisting of experts and members of European associations representing consumer interests. To make it more representative and effective the CCC was reorganized in 1989 into the Consumers' Consultative Council; many of its 39 members represent national consumer organizations.
3. The adoption in 1975 and 1981 of programs declaring basic consumer rights and stressing their importance to the EC.
4. The landmark decision of the Court of Justice in the Cassis de Dijon case in 1979. This decision established the principle that a product legally manufactured and sold in one member state should have access to any other, unless different standards could be justified on the grounds of health or safety.
5. The EC adoption of the Single European Act in 1986, a measure which provides the legislative foundations for eliminating the last roadblocks to free trade in consumer commodities between EC countries.
6. The establishment of a three-year plan (1990-1992) for EC consumer policy. The plan includes initiatives relating to consumer representation, information, safety, contracts, and comparative testing.

With regard to the future of consumer protection in the EC, consumer advocates appear to be of two minds. On the one hand, the newly established Consumer Policy Service, CCC, and three-year plan are seen as encouraging steps. On the other hand, there is concern that the goals of EC-wide consumer choice and consumer protection may not be realized soon. The threat to consumer choice, according to Jim Murray, a leading European consumer advocate, is that "the single market will be more theoretical than real and that in practical terms, the market will continue to be segmented, whether by private enterprises, by public or administrative action or for other reasons." The threat to EC-wide consumer protection, according to this same advocate, concerns the need for passage and enforcement of appropriate EC laws and regulations, and for a regulatory system capable of reacting promptly and flexibly to new developments. According to Murray, "there are far too many consumer protection directives which have yet to be implemented by at least some member states and it is doubtful also if the enforcement machinery in member states is geared to enforcement in the new context of the single market."

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The Role of Litigation in Consumer Protection

Alan Morrison, Public Citizen Litigation Group

Alan Morrison, considered the most effective consumer litigator in the U.S. today, was selected to present the Colston E. Warne Lecture at the 1991 Annual ACCI Conference. Mr. Morrison has been director of the Public Citizen Litigation Group for almost 20 years, and has served on the Board of Governors of the Washington D.C. Bar, the President's Commission on a National Agenda for the 1980's, the Administrative Conference of the United States, the Advisory Committee on Procedures for the D.C. Circuit Report, the Advisory Committee on Exempt Organizations to Commissioner of the I.R.S., and the American Bar Association Committee to Improve the Tort Liability System and to Study the Role of the Federal Trade Commission and the Initiative Process.

In 1833, Karl Von Clausewitz said "War is not merely a political act, but also a political instrument, a continuation of political relations, a carrying out of the same by other means". That is true of litigation also. Why is either war or litigation necessary? While this presentation deals with litigation and not war, there are some similarities between the two.

This paper covers consumer litigation; not such litigation as between Texaco and Penzoil, or between A.T.&T. and N.C.R., or stockholder lawsuits against companies, or employment discrimination or other kinds of discrimination cases. Those lawsuits are very important, and they present a number of problems to society, but they involve different kinds of relationships and different principles in many ways than consumer litigation.

What will be covered is what many people think of as the typical consumer case: a class action kind of litigation that seeks money damages, typically in small amounts for injuries to individual consumers where the total is large. As soon as those kinds of cases are brought, the first reaction is "Why are you causing us all this trouble? Why are there all these lawsuits? It must be the lawyers out there trying to enrich themselves and take profits away from the companies. Please leave us alone."

Because generalities are rather difficult and specifics help put some flesh on to the meaning of litigation, consumer lawsuits that our office has been involved in over the years will be described, starting with two cases involving the same industry in the same part of the country.

The first case is a case with which I have great familiarity since I was the consumer. The case involved the Riggs National Bank in Washington, D.C. When I came to Washington in 1972, I opened a bank account at the bank around the corner from my house, with another branch around the corner from where my office was going to be. In the bank, I saw a sign that said "Interest deposited in the first 10 days of the quarter earns interest from the first day of the quarter." However, at the end of the first quarter, I got a statement which showed no interest earned. I pursued it with the bank, and finally found out that if I looked on the back of the form that they had provided, in paragraph Q in very very small type, it said "Money deposited during the first 10 days of the quarter earns interest from the first day of the quarter. Money deposited after that earns interest from beginning of the next quarter." Reading further, I discovered that if I had taken my money out before the end of the next quarter, I'd have earned interest on the lowest daily balance in the account during the quarter. I figured out that I could have money in the bank for 170 days in a 6 month period, but if they were the wrong 170 days (i.e. deposits on the 11th and withdrawals just before the end of the quarter), I wouldn't get a nickel's worth of interest. That didn't seem quite right to me, and it didn't seem fair, the kind of thing that the bank ought not to be doing.

Eventually it turned out that when I wrote them and explained how unreasonable it was, they saw that I was an attorney, and that I worked for Public Citizen, and decided that they would make a special exception in my case. Since I didn't get this incomprehensible and illegible form until after the account had been opened, there had been technical violation of their rules, and so they would give me my $3.17 for the first quarter so would I please go away. While I had to go away as far as I was concerned, I didn't have to go away as far as other people were concerned. I thought that this was an extraordinarily unfair practice. There were numerous people in similar situations, each with small amounts of money so they would not likely go to the trouble to change banks. The banks count on this. Most people don't notice or don't care, and those that do aren't able to do anything about it. The ones hurt most are not lawyers and professionals, but the small savers, the people who can only put a very little bit of money in a savings account and hope to earn a little bit of interest.

We requested names of consumers from the Legal Services Office in the District of Columbia; i.e. people such as a woman who was

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not on welfare, had very little money of which some was deposited in the bank. We wrote the Riggs Bank one last time to tell them that their practices were deceptive and unfair, and they should change them immediately. We always write letters like this at the end in an effort to have the matter taken care of, most of the time it doesn't work. However, the day or two before we were ready to file, Riggs Bank came out with a new announcement that they were changing their policy and that they were going to start paying interest from the day of deposit to the day of withdrawal. They weren't going to pay back all the people who had not received interest before, but in our scheme of priorities we decided it wasn't worth it to sue the bank. It is absolutely clear to me that the bank would never have changed this practice without at least the threat of litigation by somebody they knew would be prepared to carry it out.

The second case also involves the banking industry in the District of Columbia. It involves a man named Adam Yarmolinsky who had sold his house, and bought a new house; both with mortgages, and at a simultaneous closing involving different lending institutions. Immediately he started getting charged interest on the new mortgage, but it was 10 days to two weeks before they stopped charging him interest on the old mortgage. I investigated, and found out that this was a fairly common practice in the District of Columbia, and that it applied not simply to this particular lender, but to virtually every lender in the District. And it applied even if money was borrowed for the old mortgage and the new mortgage from the same bank. They were charging double interest. The bank said it was necessary because it takes time to do the paperwork and to clear the mortgage and file the things in escrow and so forth. And we said, "No". Even with the exorbitant prices of houses in the District of Columbia, and the resulting high mortgages, we are not talking about a lot of money; only a couple of hundred dollars, which is deductible, and so people generally aren't concerned. It's the kind of transaction where you say to yourself, "in the scheme of things, do I really want to get myself aggravated about all this, about a bank that I am now leaving behind." But Mr. Yarmolinsky, to his credit, said, "No", and came to us for help.

We saw this as consumer abuse, something that the marketplace was not taking care of on its own. Consumers do not shop around for a bank based on what they do at a closing. Banks do this as a way to make additional money. Banks, particularly the lender on the way out, know that the consumer is unlikely to be there again, and is unlikely going to fight the matter. It was, therefore, necessary for us to go to court. We sued both banks involved in the closing. The reactions were quite different. The new lender said, "We charged interest from the date that you closed on the house. We were loaning you money to pay off the sale of house, we were entitled to interest. However, we agree that we are not entitled to keep money outstanding on houses sold. It will now be our policy, and we will so instruct our closing attorneys, to stop charging interest from the date of the closing." We said, "Fine.", and let them out of the lawsuit.

The other lender was rather different. It resisted and said, "No, what we are doing is right". We had brought this as a class action, and the lender opposed on the grounds that everybody was not in the same class since the mortgages are different. We responded that "All the papers are the same, all the practices are the same." The judge threw us out, said it was not a class action. At that point, because we didn't have a class action, the claim that Mr. Yarmolinsky had was for about $350. Cases for $350 filed in the Superior Court get moved to the small claims court, where you cannot get any discovery, you cannot take an appeal if you lose, and the decisions are informal and non-precedential in nature. Another thing that happens is that a case like this will take one hour of a lawyer's time which will eat up the entire $350, and so the bank simply will pay you off, it isn't worth their time, and they can more easily get rid of you and the problem all at once. Unfortunately, our appeal was not successful. The court decision made it virtually impossible for consumer class actions to proceed in the District of Columbia, creating, in effect, a license to steal small.

While we had not been able to get our case going forward on the merits, we don't stop at that point. There was a lot of publicity about the lawsuit. Mr. Yarmolinsky was a good friend of a City Council member at the time who was outraged. We began working with the City Council staff and pretty soon we had a statute, which changed the rule. It's called the "wet settlement" statute, and requires that the money be transferred back to the consumer within 24 hours. Financial institutions must now, by statute, complete the whole transaction within 24 hours.

The third case involves attorneys' fees. For years, lawyers around the country had minimum fee schedules. They would tell consumers that there is a minimum fee schedule, put out by the Bar Association, which gives the least amount of money the lawyer is allowed to charge. This prevented anybody from cutting prices, and kept the income of lawyers up. We knew a young consumer lawyer at the time, Louis Goldfarb, who had bought a house in Reston, Virginia. On his closing document was a requirement that he use a specific law firm, the firm originally used for the development. This firm did the work for the developer for almost nothing, and then got all the house closings (several hundred) when the developer sold it off, receiving 1% of the purchase price for each for giving an "opinion as to the legal state of the title". The firm hired a title searcher to have the title searched at the court house, and charged additional for that service, as well as for the required title *insurance. In the case* of the Goldfarbs, the firm charged something in the order of $514, plus $25 for preparing the deed, $25 for preparing the mortgage, and $75 for conducting the closing.

The Goldfarbs had sent letters to 35 attorneys in the area, and they had all responded with statements such as, "I would love to be able to charge you less, but this is the minimum the law will allow. It would be unethical, and I know of no lawyer who would charge less than the minimum fee schedule". Armed with this, we went to court and sued the three local voluntary Bar Associations in northern Virginia and the Virginia State Bar under the Sherman Antitrust Act, saying that the minimum fee schedules constituted an agreement in restraint of trade, and that it was just as illegal for lawyers to fix fees as it would have been for the real estate developers, the real estate brokers, the banks or anybody else in this transaction. It was filed as a class action on behalf of those who had bought homes in Reston, Virginia within the last four years. The class was large enough to be significant but not so large that it would be unmanageable. The Goldfarbs asked for damages, injunctive relief and attorneys' fees as well. This was the first case ever brought against lawyers under the Antitrust Laws, and it was a question at the time whether lawyers could be subject to the Antitrust Laws and whether particular state bar associations, which were arms of the state court and set up by the state court, could be subject to suit under the Antitrust Laws.

Just before we were ready to go to trial, two of the three local bar associations came to me and said, "We are prepared to withdraw our fee schedules and to write our members and tell them that they should set their prices according to their own best judgment, if you are willing to let us out of the case". We did, and to mix a metaphor, were able to have our case and dismiss it too. We were able to get down to only two adversaries instead of four, and to have a psychological advantage when we got into the higher courts to be able to say, "The remaining defendants are claiming that if you knock out minimum fee schedules, lawyers will not be able to deliver services. Yet, in two counties, they've done it and people are still getting legal services." We went ahead with the lawsuit, and won half of it in the trial court. We lost all of it in the Court of Appeals, and went to the Supreme Court. The Justice Department Antitrust Division came in on our side to help us out, and we won the case 8 to 0 in the Supreme Court. This was a major victory, making lawyers subject to the Antitrust Laws for the first time. We went back to litigate the issue of damages, and settled the case for $225,000 distributed among about 1500 class members. The average distribution was only $139 each, but the message that went out to every bar association in the country was that lawyers need to worry about Antitrust Laws. It was the beginning of the change in the way the public and the courts have viewed the legal profession, recognizing the commercial aspects. The Bar Associations had said, "If we can't have minimum fee schedules, the income of lawyers will suffer, and we will not be able to be as attractive a profession as we were in the past," to which I had replied, "Precisely."

What kinds of things can we learn about consumer litigation from these three cases? The first proposition is that lawsuits, or a realistic possibility of a lawsuit being commenced, are often necessary. The realistic threat of bringing a lawsuit, if made credibly by people who are known to be willing and have the ability to carry out those threats, will be effective. This is necessary to bring about change.

Second, despite what industry claims, consumers are often willing to settle for less than they are entitled. In the Riggs bank case, we could have gone in and asked for money for past damages, but it made more sense in terms of allocating our resources to say "Let's get on and deal with some other problems that affect other people". Consumers are generally willing to settle low, while companies and defendants are not, they will stonewall and say "we'll see you in court."

Third, small claims are very easy for big companies to get rid of. They simply buy them off, and then only if somebody actually goes to court against them. Otherwise, they simply tell people to forget it, knowing that most people don't have the time, money, inclination or ability to do anything about it.

Fourth, lawyers are essential. We hear lots of criticism of the legal profession, much of it justified. But, in many areas it requires a lawyer to have a credible threat of having to do something about a problem and to effectuate change.

Fifth, lawsuits, even when they are not successful, generate publicity, generate interest, and generate information that can help bring about change from public pressure or result in legislative or regulatory activity.

Sixth, there are significant variations in the conduct of companies within the same geographical area and within the same industry. People react very differently to the possibility or the actuality of litigation, and it is surprising to see how people perceive their interests so differently. Some are more willing to talk and get out of the lawsuit and make some compromises. Others throw down the gauntlet and sometimes when they lose, it can be a very big loss: not only for them, but for others

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similarly situated. They rationalize their fight on the grounds that they're going to win, without thinking about the possibility of what will happen if they do not prevail.

Seventh, cases from the plaintiff's side are handled rather differently, depending on who the lawyers for the plaintiff are. We are a non profit organization, and we operate rather differently from commercial law firms that engage in consumer class action litigation. From the defendants' perspective, this is both good news and bad news. The good news is that we won't hold them up for a lot of money. The bad news is that the absence of being able to hold them up for a lot of money won't hold us up from suing them. We are "economically irrational" when it comes to litigation, which makes it very hard for defendants to deal with us. We deal with both principle and principal.

Eighth, litigation imposes costs which are often significant. Sometimes, in lawsuits, the only people who win are the lawyers who get paid. Sometimes lawyers appear to be pushing the case forward, recognizing that their fees will continue to mount up as the litigation proceeds. Sometimes, the legal profession has a longer range view that litigation is not the end of the process; i.e. if a law suit is lost, there are two or three other avenues left to achieve the intended result. And, sometimes people don't realize that if you win a lawsuit, that may be only the beginning of your aggravation and you may end up with something much worse than you had to begin with.

It takes work to litigate. The Caplans, home owners in Scarborough, New York, got into a dispute with their bank where they had a home mortgage and were required to pay monthly into a tax escrow account. Under the terms of the mortgage, they had to pay 1/12 of the annual real estate taxes as estimated by the bank. Where they lived, there were three separate taxes, two of which were collected twice a year, not at six month intervals. The bank set up five separate accounts for tax escrow to make sure they had enough money to pay each of the taxes as they came due. In each of the separate accounts, there had to be enough money to pay that tax when it came due regardless of whether that same home owner had money in another escrow account that would be more than sufficient to pay it off. The effect of this was to significantly increase the amount of money that had to be paid each month into the escrow account, and to enable the bank to have between $1,000 and $2,000 more at any given time under their method than under a method of co-mingling the funds from the different escrow accounts. The bank referred to this method of handling the transaction as the "fully accrued method". We referred to it by another name that rhymes with accrued and sounds more like what the bank was doing to the consumers. Mr. Caplan noticed that his escrow payments were increasing at the same time that his taxes were staying level or going down. He finally was able to fathom what was happening, and wrote the bank. He included comparison charts, and showed them how every single month under his method they would have enough money to pay off the taxes. He even offered to pay a bit extra so that they could have a cushion. No, the bank preferred their method of doing it, not surprising because most escrow accounts do not pay any interest. New York State law required that the bank pay 2% interest, but at that time interest rates were in the 10-16% range, so the bank was doing very nicely on the Caplan's, and on everybody else's, money as well. Mr. Caplan wrote the State Attorney General and the banking authorities, nobody expressed any interest in doing anything about it.

Because he refused to send in the extra money, the bank sued to foreclose on the Caplan's house for nonpayment. The court said the amount as estimated by the bank is acceptable. The bank was about to sell their house when Mr. Caplan contacted us and asked what, if anything, we could do about it. We took the case on, and Mr. Caplan had to post a $10,000 bond to prevent the sale of their house. We took the case to the intermediate court in New York, and we won a reversal and a remand.

The court said to the bank, "We don't think this mortgage allows you to do that, but you've made some allegations about the custom and about what Mr. Caplan knew at the time, and if you think you can prove that, we'll allow you to go back and prove it." The bank had this foreclosure action and they were insistent on proceeding with it, so we said, "We can't stop you from proceeding, let's take some discovery." Then the Caplans told me that they wanted to sell their house. I wrote the bank to let them know that the Caplans want to sell their house, and are prepared out of the proceeds of the sale to pay 100% of the principal and 100% of the accrued interest. Further, they are willing to put in an interest bearing escrow account to be held pending the outcome of the litigation, all of the additional money owned for penalties, attorneys' fees and everything else, whatever amount the bank claimed was owed. The bank wrote back and said "No." I replied, "you are fully protected, and are causing serious injury to my clients," and they wrote back again and said, "It is our right, we want 100% payment." The Caplans were adamant, they refused to do that, and I said, "Fine." But they were unable to sell their house, or to rent it out for a good rent. We then filed a counter claim against the bank for abusive conduct in connection with absence of good faith dealing, and all sorts of other heinous crimes that we alleged against the bank, all of which were true; none of which had ever been brought before a state foreclosure case. Things went from bad to worse. The Caplans were going to take the proceeds of their sale and put the money in treasury bills. The treasury bills were 14%, and the market fell out. The housing market fell apart in New York and worse, there was a zoning change in their area, and a big factory was going to be built not far from their house. There was a big controversy about the factory and some of the leaks from chemicals. All of this, of course, was this bank's fault in our view. It wasn't the bank's view, but it was our view.

Meanwhile, as this was going on, somebody at the bank decided that yes, they would allow us to sell the house. The house was sold, and the money was put in escrow precisely as we asked to do more than a year and a half before. We proceeded with the litigation, the bank was still unwilling to settle. Finally, the Caplans came to me and said, "We can't go on with this any more. This is too disruptive of our lives. Can we find some way to get out of this and get some money?" I went to the bank and persuaded the bank to pay all of the disputed money, all the attorney's fees, all the penalties and everything. In addition, they paid the Caplans $5,000 in cash. This was nothing compared to their actual losses, but they had to get on with their lives.

While this lawsuit was going on the Caplans said to me, "Can we make our lawsuit into a class action?" I explained several problems: first, the case was now in the intermediate court of appeals and it's hard to start a class action at that point; second, this is a mortgage foreclosure case; and third, you are the defendant. It would be extraordinarily difficult to bring a class action in these contexts. The Caplans asked, "Can someone else do it?" I said, "Yes." They asked if I would take them on, and I said "I'd be willing to do this, it seems to be an outrage, and we should do something about it." So the Caplans started talking to all their friends, almost none of whom had accounts with this bank. Several had accounts with other banks in the Westchester area, and a large number of them had a similar problem which they discovered when the Caplan's pointed it out to them. The Caplan's friends said, "Yes, it's wrong, but we don't want to get involved." And so we tried to strike a wider circle. The Caplans went to the deed books where mortgages are recorded, and they looked through to find out who they knew in their area who had a mortgage that they might get interested in starting the class action. They found a few people they knew, but none interested in starting a class action. Others were afraid that their bank would do something like the Caplan's bank did to them. People liked their homes, and were not anxious to sacrifice them for a couple hundred dollars which, of course, all of the banks understand perfectly well. As a result, we couldn't get anyone interested in starting a class action suit.

Finally, in 1988 the Attorney General of New York and some other attorneys general got together and started an investigation into these escrow practices. This was the same Attorney General who was not interested ten years before when we first contacted him, or six years before when we won the case in the appellate division in New York and a published opinion was widely circulated. A report was published about eight or nine months ago, and there are now congressional hearings in the House and probably going to be in the Senate about outlawing this practice entirely. In actuality, banks will continue to have any kind of accounting practice they want. The one very simple non-regulatory , non-bureaucratic, non-litigative solution is to simply say, "If you have an escrow account, you have to pay passbook interest rate on the escrow account." That's all. End of discussion. That will immediately tell you how much the bank is interested in security for the payment of taxes and how much it is interested in making money off of your money without paying you anything for it. Very simple, easy to administer, no problems. If you pay five percent to your savings books depositors, you have to pay five percent to the mortgage holders.

One final observation concerning this case is that the Caplans would have been no place without a lawyer, without an economically irrational lawyer since we didn't get any money out of the case at all. The banks know that as do most other large institutions.

The final group of cases I want to cover are those in which the nominal defendant is a regulatory agency. The real target is the regulated industry, or what is supposed to be the regulated industry. The claim in those lawsuits is that the agency didn't obey the law, or it unreasonably delayed in taking action, or it acted arbitrarily in the face of the evidence before it. Basically, we're saying that the agency didn't do the job Congress, in most cases, but sometimes State legislatures, directed it to. This is a rather unusual kind of lawsuit or it at least would have been unusual up to twenty years ago. Until the late 1960's, all lawsuits involving regulatory agencies were brought by the regulated industries who were claiming that the regulators were too zealous. We are now claiming that they are too cozy. It is the ultimate failure of the New Deal, and the assumption that the government would always provide protection, that has caused the change in these kind of lawsuits where the regulating agency is part of the problem and not the solution. There are many reasons why this has occurred, and there are others who have written and spoken about it, but there is little doubt that it occurs although as to the specific industries and specific agencies, there are some differences about it.

One example of this involves a product known as infant formula. During the mid-1970s, Congress had hearings and found that a large number of mothers were giving their infants infant formula that was seriously defective in terms of the nutrients that were supposed to be in it and some of the other components of the formula. Some of these defects were the result of inadvertent errors, and some were the result of the water *used with the product. As the sole food that* they were getting, this could cause very serious and permanent injuries to infants. Congress decided that the powers of the FDA under the Food, Drug, and Cosmetic Act statute were not sufficient to deal with this very special circumstance, so they passed an Infant Formula Act in 1978 or 1979. In the latter days of the Carter administration an excellent proposal was put forth that would have carried out the intent of the Congress and provide the protection that was necessary. Unfortunately, for a great many other reasons as well, there was an election in 1980 and Ronald Reagan and his staff came in and one of the first things they did was to revise the regulation and make it worse. As a result, new loopholes were created in the regulations, and many potential and actual problems occurred. When these regulations were issued, we went to court to challenge their validity. We sued the agency, the agency defended the regulations, and the court said that while it is true that the agency was probably not faithful to the spirit of the law, Congress had not put enough "shalls" and "musts" in, they had put in some "shoulds" and "ought to's". As a result, we must give deference to the agency and we will sustain the regulations. Fortunately for us, we had friends on Capitol Hill who stepped in and saw the outrage, fixed it up, and were able to get amendments in parts of other legislation that was not vetoed. I ask somewhat rhetorically whether that way of doing business is in the best interest of the industry or the government.

Where does all that leave us? I wish I could say that I was optimistic that there was going to be less litigation in the future, but I can't be. There are still a great many recalcitrant companies and unfaithful agencies. Some people get the word and try to avoid litigation at least some of the time. The real problem is that the mule needs to be beaten to get his attention more often than should be necessary. Letters are often not enough, letters can be unanswered. They do have to answer a summons and a complaint lest judgment be entered against them. Surprisingly, the Litigation Group would prefer not to litigate. We are ready to do so and we are willing to do so, but we would be pleased to be put out of business if all wrong-doers would see the error of their ways and give in to consumers and produce a fair world. We don't expect that to happen anytime in the immediate future. We think there will probably be a lot of opportunities for litigation and while we're prepared to be reasonable and to compromise, we won't surrender. We must continue to have our credible threat if we expect any changes to be made "voluntarily" or otherwise. When people won't answer a call, there's only one way to get a response and that is to bring a lawsuit against them. So as they say, "I'll be seeing you in court;" at least for the foreseeable future for most disputes.

Discussion:

What criteria do you use in accepting a case? Most of my decisions about whether to litigate are based on close to twenty-five years of experience. We look for cases that we think will have some effect beyond the immediate parties to them, that will have an opportunity to set some wider precedent, that will affect large groups of people. We look at the possibility of victory. As litigators, we get more and more involved in the process and see our side of the case increasingly strengthening, the problem is sometimes to see the weaknesses. Another important criteria is that the case be factually rather simple. I prefer a case in which the pattern is not unique to these particular parties and in which we will not have to spend a great deal of time discovering and proving the facts. If a case is not precedent-setting, someone will be able to say the next time that the facts are very different, and we will have to go back and prove the whole thing all over again. We are very conscious about that in terms of the long-range goals, and also in terms of keeping our expenses down. We infrequently get involved in deeply complex cases. Importantly, I have a gut-level feeling as to whether this is an outrage, something that I'm prepared to go to war over and that I think is an important issue to a large number of people, not just something that affects only a few. Part of it, also, is the question about whether this is a particulary good plaintiff, it's important for us to have the consumer client be a person who will evoke some sympathy and who can be of some assistance to us in the conduct of the case.

What issues are you currently litigating? We have brought the first consumer lawsuit ever challenging the validity of a patent. The case happens to involve AZT. It is a very important issue for the people who need AZT because the drug is enormously expensive. The issue is a rather interesting one because it involves the question of whether the federal government, which did almost all the research establishing that AZT, slows down the spread of the HIV virus, should be the co-owner, if not the sole owner, of the patent. It is an unusual patent case in that regard. It is unusual because it is a consumer lawsuit, almost all the patent cases you will see will be manufacturer vs. manufacturer, or importer vs. manufacturer, i.e. business people on the business side. I expect that the first thing that will happen sixty days after the complaint is filed, when they're going to file their motion or their answer, they will file a motion to dismiss, saying "this is a patent case, and consumers have no business bringing patent lawsuits, patent lawsuits are between patentees". That will be a very important motion because we want to establish the principle that the patent laws really are a kind of consumer protection law, like the anti-trust laws. They operate to create a monopoly, but ultimately that monopoly is for the benefit of consumers. That's the rationale for having the monopoly to begin with. What we are saying is that when the terms by which that monopoly are to be granted have not been followed, those who are the victims of the illegal monopoly have every right to go to court and sue just like they have the right to sue over other illegal monopolies under the Anti-Trust laws or other certain Common law doctrine.

The National Survey on the Status of Consumer Education in US Schools Grades K-12

Carole A. Glade
Executive Director; National Coalition for Consumer Education

The National Survey on the Status of Consumer Education in US Schools Grades K-12 is a compilation of data on how consumer education is addressed in the curricula in all 50 states plus the District of Columbia. Sponsored by the National Coalition for Consumer Education (NCCE), the survey was conducted through its network of state coordinators. State school chiefs provided information as to the status of consumer education mandates, policies, and informal practices in their respective states.

The National Coalition for Consumer Education

The content and quality of education in America's schools have become major topics of concern. While education has been put high on the list of national priorities, the National Coalition for Consumer Education (NCCE) is concerned that the importance of consumer education in school curricula has not been sufficiently addressed.

The NCCE, celebrating its tenth year of advocating consumer education in our nations schools, communities, and work places, acts as a catalyst to promote and encourage the development of life long consumer skills. Leaders from business, government, education, consumer groups, and the media work through the Coalition to maximize and share resources. Through a network of state and regional coordinators, NCCE tailors educational efforts and projects to meet local needs.

Several current projects of NCCE include a four year million dollar consumer credit education fund with AT&T, an annual consumer education materials contest with the US Food and Drug Administration, and other local programs focusing on personal financial management and environmental issues.

Methodology of the National Survey

The National Survey was conducted to better understand how and if consumer education is addressed in school curricula. Current research focuses on economic education, while little has focused on consumer education. NCCE intended to update information gathered in a 1981 study "State Consumer Education Policies: An Update."

A written questionnaire was sent to state school chiefs in all 50 states and the District of Columbia. The state and regional coordinators of the NCCE then conducted interviews with these school chiefs to gather perceptions and specific information about issues within each of the states.

The school chiefs were asked to describe consumer education in grades K-8 and grades 9-12 in both general and vocational area.

In this survey, consumer education was defined as four major areas:

- economic decision making
- economics
- personal finance
- consumer rights and responsibilities.

The questionnaire sought to determine: is there is a state-wide policy regarding consumer education; what does the policy cover; is it mandatory or voluntary; who established the policy; is the policy law, resolution or a policy statement; is consumer education elective, optional or integrated; and does their student assessment program, is any, include consumer related subject matter?

All responses were tabulated and analyzed by Dr. Charlotte Scott of the University of Virginia McIntire School of Commerce.

Key Findings

Most respondents noted that more emphasis should be placed on personal financial management. Issues related to health, safety, environment, and marketing practices are seen as sorely lacking in consumer education today.

Barriers noted to including consumer education in the curriculum were many. Most responded that there is a lack of time to teach consumer education because more curricula focus on basic skills. Deficiency in teacher knowledge of consumer education and the lack of good materials were also noted as crucial barriers to including consumer education in the curricula. Many responded that consumer education is seen as vocationally focused, rather than skill focused.

Asked what would happen if budget were not a constraint, many responded that they would first make consumer education required in elementary and secondary schools. The development of realistic materials that support the existing curricula were also noted as important along with the need for more cooperation from state consumer agencies in educational initiatives.

Implications for the Future

All respondents said that consumer education should be at or near the top of the agenda for revitalizing education. While business leaders and teachers were noted as most likely to discuss consumer education initiatives, there is a need for a united effort involving students, teachers, parents, community leaders, business, and government agencies.

Summary

While consumer education is represented in school curricular to some extent, there is a pressing need and interest to develop more comprehensive strategies for preparing students to face tomorrow's challenges. The National Coalition for Consumer Education encourages all people to review this important document and to use the information to promote and encourage consumer education in local areas.

The NCCE will continue to serve as a catalyst to address these needs, especially in the areas of teacher and materials development for main streamed, disenfranchised, and culturally diverse students. This study challenges all business leaders, educators, government officials, and consumer advocates, to work with NCCE and others to address these critical needs. In times of limited resources, we need creative solutions. We must all be active players as partners in education.

Copies of the 90 page survey can be obtained for $25 from:

The National Coalition for Consumer Education
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THE BENEFITS OF CONSUMER EDUCATION

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In 1990 a survey conducted by the Michigan Consumer Education Center asked a select group of consumer education professionals to identify the benefits of consumer education. Their responses, which are the basis of a 1991 publication of the Center titled "The Benefits of Consumer Education," can be categorized under five headings summarized by the following words that appear throughout the survey--*confidence, skepticism, knowledge, longevity* and *satisfaction.*

When consumer educators get together for hallway discussions and after-dinner conversations at ACCI, one question that sometimes comes up is how to encourage consumer education in a variety of settings. The evidence is strong, as we've just heard, that American consumers are much in need of education, and yet the work of expanding its importance has never been easy. Still, consumer education has a constituency of supporters and advocates, consisting not only of educators, but also corporate leaders and government officials. They recognize that it's exciting, it's interesting, it's needed, it's relevant and the general public has positive opinions of it. And yet consumer education is under-appreciated and its benefits too often overlooked.

Such puzzlements as these can be seen as a backdrop to activities that have been taking place in Michigan under the name The Michigan Agenda for Consumer Education. The Agenda was a three-year plan to strengthen consumer education and promote its importance. It was a funded by a partnership between education and business and located at Eastern Michigan University. The Michigan Consumer Education Center managed and coordinated its activities and I helped with that work.

From the beginning, the Agenda's leaders felt that promoting consumer education meant publicizing its positive aspects and its solid achievements. One component of this was a project to gather information about the benefits of consumer education and to publish it in formats that would be easily accessible and broadly available.

The Survey

In order to address this objective, it was decided to poll leaders in the field to see what could be gleaned from those who had devoted their professional lives to the education of consumers. Accordingly, an open-ended survey was devised. In early 1990 it was sent to a group of 30 consumer education leaders from across the nation, persons with distinction in either academic or applied specializations. Included were authors of consumer education textbooks, administrators of government consumer affairs programs, corporate executives responsible for consumer education, and elementary and secondary teachers recognized for developing outstanding programs.

The purpose was to solicit individual opinions from acknowledged experts. This method, actually, has classical roots. In the Platonic dialogue called Meno, Socrates asks Meno, "if we wanted [to instruct someone] to be a good cobbler, would we not send him to the cobblers?" Or if we wanted to learn about medicine, wouldn't we go to physicians. Well, we wanted to learn about consumer education so we went to the educators.

A tally of the returns showed a 60% response rate, that is, 18 surveys were filled out and sent back. The survey required more than yes/no answers since all four questions called for essay-type responses. Responses ranged in length from bulleted items to paragraphs of several hundred words to a two-page outline. In order to provide respondents with the chance of expressing themselves in a different setting, there was a follow-up session in the form of a round-table discussion at last year's ACCI meeting. The information was used as a starting point for an article I contributed to the current issue of *Advancing the Consumer Interest,* (ACI). In a shortened and revised form, the same information was published just this week as a brochure. The ACI article, the brochure, and my remarks this morning are all based on survey responses, comments recorded at the follow-up meeting, or published research that I reviewed.

Not surprisingly, many of the benefits as set forth by the experts were articulated in very broad, inclusive terms. For example, one respondent said that consumer education helps individuals to understand their role in the marketplace, while another said consumer education gives people a more inclusive view of the economic system. According to another respondent, consumer education improves the quality of life, a view which seems reasonable in a society as strongly oriented to a market economy as ours is. Finally, consumer education was said to benefit people because it helps them meet their goals.

Though couched in unspecific language, these benefits are realistic enough. Their significance is that they seem to represent an effort on the part of educators to show that the boundaries of consumer education are wider than most people think. Certainly, the scope of consumer education has broadened well beyond the concerns of so-called "buymanship." It now includes instruction in consumer rights and responsibilities, participation in the economic and political systems, and an exploration of the costs and benefits of consumer decisions.

One survey question asked respondents to list the benefits of consumer education to individuals. In poring over their answers, I realized that some of the same words and phrases kept re-appearing. One way of categorizing the ideas expressed in response to the question of individual benefits is to cite five of these abstract nouns around which several responses clustered. The five words are *confidence, skepticism, knowledge, longevity,* and *satisfaction*.

Confidence

The first of these, *confidence*, appeared along with its causal word, *empowerment*, in at least half the surveys. It refers to feelings of certainty, optimism, and self-reliance in consumers who were less certain of themselves before their exposure to consumer education in whatever form. As expressed in the survey, "one of the individual benefits is that consumers have the experience of being in control of their fate, of possessing the ability to function well on a daily basis, of being independent." "Their understanding of the system," said another respondent, "and their knowledge of how to deal with it can give them enhanced perception of their managerial abilities." A state law enforcement official said that consumers who are well-versed in their marketplace rights, and thus self confident, assist law enforcement since there's less need for government regulation and subsequent enforcement. An official of a different state, whose agency hears consumer comments every day, said that the self-confidence resulting from consumer education makes people more comfortable in voicing their opinions, when necessary.

And finally, these words from an elementary school teacher who achieved renown for making consumer education the major focus in her classes. "Students gain self-confidence, pride, and independence when they make wise choices and when they are treated with respect--as they are when the teacher respects them enough to allow them to make their own choices. Or, when they spot undesirable practices or situations and are able to correct them. My students have forced a lake clean-up, gotten sidewalks, installed planter boxes, gotten a traffic light, and affected company policy through their letter writing. A student who can make a change in people's lives becomes a very proud, confident student, committed to participating and helping."

Skepticism

Skepticism is the next word. In consumer terms it refers to withheld judgment or a doubting disposition in regard to commerce. As one survey respondent wrote, "For the individual, consumer ed should, ideally, spark a lifelong skepticism about the messages being received from the commercial world and instill a need to be cautious." In many survey responses, the term *analytical thinking* was almost synonymous with skepticism in that both share the same reluctance to embrace received opinion. The skeptic waits to be convinced while requiring all ideas and issues to pass through the filter of skepticism, while the analytic thinker hopes to arrive at a better understanding by dividing issues or ideas into their component parts according to some logical basis of division. A major benefit to individuals, according to one respondent, is that "consumer education builds analytical skills for the analysis of everyday problems including acquisition of difficult information and understanding of personal priorities and values."

Analytical thinking, or a skeptical attitude, will teach a person to question time-honored precepts and rules of thumb such as "You only get what you pay for" which recent research has shown to be questionable, and sometimes dead wrong. Finally, in considering the dominant role played by advertising, especially on TV, a healthy skepticism can help consumers make the vital distinction between appearance and reality, between what seems to be and what actually is, so that advertising can be seen in truer perspective.

Knowledge

The next word is *knowledge*. The quality which respondents described under this term is the readiness or capacity exhibited by students of consumer education to absorb the collection of information, facts, laws, procedures and so forth which form its usual subject matter. A more common, though longer, term might be acquisition of consumer life skills. These skills are one of the undoubted benefits of consumer education and they were mentioned by more than half the respondents, using one term or another. In the words of one person, "consumer education attempts to inform buyers, to strengthen life skills, and to increase knowledge." These life skills are what give consumer education the practicality and relevance that make it so useful to young consumers who are inexperienced buyers and so extolled by their parents or guardians who are preparing them for the future.

One of the chief skills to be learned is the careful use of scarce resources with a focus on informed rather that haphazard purchasing. Consumers who start the buying process by distinguishing between needs and wants and proceed to take advantage of shopping tips, product and service evaluations, and other relevant consumer information will save money. Research by Cude shows that informed buying decisions can bring about dramatic gains for consumers, especially with low-cost, repetitive purchases. This may have been the intent of the respondent who wrote that "Consumer education gives rise to increased skill in gathering information and preparing for first-time consumer decisions."

Longevity

Longevity is the next word. It appeared in its adjective form, *long-lasting*, referring to the fact that the lessons of consumer education, if learned well, can last a life time. Because consumer education results in understanding principles which apply in the long term, they are independent of changes. To quote a respondent, "Consumer education is the process of imparting concepts and capabilities. Concepts have lasting value, being transferable to other situations and points of time." Another respondent was more to the point. "Consumer education has lasting benefits because it is for life."

Of course, this is said of many kinds of education: Teachers of science and arithmetic, for example, say the same thing and illustrate their point by citing applications of their subject which occur from childhood to maturity. That doesn't invalidate the claim of consumer education, however, and it must be included among academic subjects that have daily usefulness and that last as long as the person functions as a consumer, even though vast changes occur.

One caveat when talking about life long benefits of consumer education is the difficulty of measuring them over the span of a person's existence. In 1970 Joseph N. Uhl noted that there had been little or no effort to calculate the value of consumer education over a lifetime. Unfortunately, the situation is much the same in 1991.

Satisfaction

The last word, *satisfaction*, refers to the contentment or well-being that consumers feel in controlling their own economic destiny, in handling their affairs adroitly. Some examples from the survey follow:

a) According to one respondent, "consumers maximize their satisfaction when they employ decision-making skills and appropriate resource allocation and usage. Individuals can enjoy a fulfilled existence as they benefit from wise consumer practices and as they realize the personal rewards involved."
b) "In helping a person to reach more nearly his/her individual goals, consumer education also assists in maximizing the amount of satisfaction that comes from the resources which the individual controls."
c) "One important benefit of consumer education is increased satisfaction with the use of one's personal resources. If consumers pay attention to matching their values and ideas about a high-quality of life with the way they use their resources, a closer match is likely and the potential for personal satisfaction increases."

According to these responses, and several parallel observations not quoted, satisfaction is a concomitant of certain practices that sound almost Biblical in their probity--good judgment, responsibility and self-awareness. These are the values which have consumer satisfaction as a by-product.

Under these five key words, *confidence, skepticism, knowledge, longevity,* and *satisfaction,* can be categorized the benefits of consumer education to individuals. Obviously, the categories are not absolute in any sense, but for purposes of today's panel they are, I hope, at least illustrative of the survey. In this presentation which has accentuated survey procedures and individual survey responses as much as survey conclusions, I've tried to give due regard to the rationale used by ACCI in bringing the three of us presenters together on the same platform. We've all "conducted" surveys, though they were vastly different from each other in scope, purpose and methodology. This may suggest their divergent uses.

By spotlighting the benefits of consumer education to *individuals,* I didn't intend to de-emphasize its benefits to society and to business. They are very real and of no small significance. In fact, I was provided with fresh evidence of the benefits to business by Mary Levy of the Consumer Information Center in Washington who reports that over the last ten years, more than 50 consumer education publications have been co-produced by a corporation or trade association and a consumer group. The corporation supplies the funds, the consumer group provides the expertise and the Consumer Information Center is the intermediary. Consumer names like National Consumers League, Consumer Federation of America, and Environmental Protection Agency on one side and business names such as American Express, Goodyear, Pennzoil and National Futures Association on the other. It's common enough to be a trend. The point is that if business is prepared to fund consumer information and education, there must be some measurable benefit.

For anyone curious about additional benefits of consumer education to society and business, I can only refer you to the previously mentioned publication of mine. Thank you.

Thoughts on Using Consumer Expenditure Survey Data

Jeanne M. Hogarth, Cornell University[1]

My work with the Consumer Expenditure Survey (CEX) data started with my Master's thesis, using the 1972-73 data to construct income elasticities for household energy expenditures. That was back in 1979; the next time I worked with the data was 10 years later while on sabbatic at the Bureau of Labor Statistics, Division of Price and Index Number Research. At that time, I was interested in studying the relationships between income sources, assets, and expenditures in older households. My interests fit in with a project BLS was doing on data comparability among federal household surveys.

We chose to set up "parallel" data files using the 1983 CEX and the 1983 SCF to begin to see if matching or merging of the data was possible. A more complete description of this work can be found in the proceedings from the conference on "Enhancing Consumer Choice" (Garner et al., 1991). At BLS, I was able to work with the proprietary data sets and had access to consultants who were intimately familiar with the data, the data management system, and the computer system.

Back at Cornell, I set about to reproduce the parallel files we created at BLS, using the public use tapes for CEX. As I worked with these data, some issues arose which could be placed on a "wish list" for BLS.

1) File management. I know that Census and the Bureau do not know how researchers will be using these data, so they set up "generic" files. However, my experience is that I can only link the files with the help of a computer consultant. Having files in a SAS format would allow me to access the files and create the data set I need without hiring a consultant.

2) Variables. While we all understand the need for confidentiality, and thus the top coding and supression of some variables, there are some variables that would enrich our research if included in the public use data. For example:

Credit variables. For younger families especially, it would be interesting to know how much of their income goes to servicing credit agreements and the effects of recent tax law changes on household credit arrangements and use.

Rural information. For those of us in land grant institutions with access to Hatch formula funds for our research, social science research needs to justify how it will improve the lives and livelihood of rural residents. While we appreciate the need to maintain the confidentiality of rural respondents, we need to be able to incorporate appropriate variables in our analyses. The Bureau should continue to collect data from rural residents and make regional and urban/rural information available on the public use tapes.

3) Additional data. Recognizing the major purpose of the survey (i.e., data for constructing the CPI) and issues of respondent burden involved in a survey of this magnitude, I would encourage the Bureau to continue to review the relevance of the questions asked and the data collected, keeping in mind the need to have comparable data with previous survey years. As times change, questions may need revision to reflect current household structures, incomes, and expenditures. For example, it may be time to include a "remarried" category in the marital status variable.

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Estimating Price Effects in the Absence of Price Data: A Comparison of Elderly and Non-Elderly Households*

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This research derives estimates of price effects under less than ideal conditions. Though restrictive, the approach appears allows comparisons to be made across groups. Seven commodity groups are analyzed: health care, apparel, entertainment, food, housing, transportation, and other expenditures. Estimates for elderly and non-elderly households are compared and suggest differences.

Do elderly households fare differently from younger households when prices of goods and services change? Information about the effects of price changes have implications for addressing level-of-living. By applying a modified linear expenditure system to cross-section micro data, price elasticities are calculated in the absence of abundant price data. Combined with information on budget shares, these elasticities identify how price changes affect the elderly in various socio-economic categories differently from the younger population.

Review Of Literature

Consumption

The life cycle hypothesis (Ando and Modigliani 1957) forms the foundation for examining the spending practices of the aged. While the majority of studies have focused on dissaving behavior vs. consumption in the aggregate (e.g., Hammermesh 1984; Danziger, et al. 1978), some have addressed individual expenditure categories within the broad allocation of consumption. In the latter case, the most common method used to examine consumption patterns of the elderly, given a dearth of price data, has been to estimate income effects only. Chen and Chu (1982) and McConnell and Deljavan (1983) estimated Engel curves for various age groups using 1973 Consumer Expenditure Survey data. Various demographic variables were regressed on budget shares, leading to similar results: aged consumers differ in their budget allocations and income elasticities of demand than do younger persons.

Income and Prices

Per capita income of persons over the age of 65 is about 30 percent lower than that of ages 55-64 and many of the retired elderly live on fixed incomes. Older persons do, however, have access to several discounts, tax incentives, and transfers. In addition, elders have larger values of total wealth (Fuchs 1983). Nonetheless, 11.8 percent of elderly women and 6.1 percent of elderly men live below the poverty level and 12.4 percent of elderly households make less than $5,000 per year (U.S. Bureau of the Census 1988). And, although the number of elderly poor has decreased since 1980, many elderly have trouble meeting daily expenses (Duncan 1984). This is due in part to the differences in income distribution among the elderly and the illiquidity of wealth compared to income.

Little research on consumption patterns of older Americans has addressed the impact of price changes. Deak and Smith (1974) noted that because persons over age 65 allocate a greater percentage of their income to medical care, food, and housing than do younger individuals, they are more adversely affected when prices of goods and services in these expenditure categories rise faster than the general rate of inflation. Some work has focused on whether a general consumer price index (CPI) is an adequate (or appropriate) measure of the cost of living of the elderly. Bridges and Packard (1981) reviewed various estimates of a price index for the elderly and found the CPI for the elderly has risen faster than for the general population.

Virtually no research on expenditures of aged Americans has included prices in analysis of budgets. The explanation of choice is that most studies use cross-section data in which prices are assumed to be constant. However, this is not the case.

Advances in estimation methods improve the ability to measure price as well as income effects when studying consumption patterns. Specifically, Frisch's (1959) money flexibility parameter used in conjunction with data on wage rates allows the calculation of price elasticities when abundant price data is unavailable (Betancourt 1971).

Methodology

Theoretical Framework

We use a modified version of the linear expenditure system to estimate one labor supply and seven expenditure functions for three income categories of younger and older Americans. Though statistically this method is quite restrictive, it shows promise in allowing comparison of groups[1]. Specifically, it can be ascertained whether price elasticities differ based on demographic characteristics.

Following Betancourt (1971), a consumer's utility function can be written:

$$U = (1-b)\sum_{i=1}^{N} b_i \ln(q_i - c_i) + b\ln(L-\ell) \qquad (1)$$

where

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[1] The specification of the utility function imposes strong separability and the assumption of two-stage budgeting. All goods are normal. All goods are net substitutes (Johnson et al. 1983). Though additivity is a restrictive assumption, for broadly defined categories of goods and services it is not an unreasonable description of consumer behavior.

b_i = marginal propensity to consume out of income for the ith commodity ($i=1,2,..,N$).
q_i = quantity of the ith commodity.
c_i = minimum required quantity of the ith commodity.
b = the marginal propensity to consume leisure.
L = the quantity of leisure in hours.
ℓ = the minimum required quantity of leisure.

This utility function is maximized subject to time and income constraints.

$$T = L + M \tag{2}$$

where

T = total time available
M = total hours of labor supply.

$$wM + v = \sum_{i=1}^{N} p_i q_i \tag{3}$$

where

w = the wage rate
v = income from non wage sources.
p_i = the price of commodity q_i, ($i = 1,2,..,N$).

The two constraints can be collapsed into a singe constraint

$$w(H-\ell) + v - \sum_{i=1}^{N} p_i q_i = 0. \tag{4}$$

Maximization of (1) subject to (4) yields the demand equations:

$$q_i = c_i + p_i^{-1} b_i (Y' - \sum_{i=1}^{N} p_i c_i) \tag{5}$$

where $Y' = wM + v$

and

$$Y' = w(h-\ell)(1-b) + (1-b)v + b \sum_{i=1}^{N} p_i c_i. \tag{6}$$

The parameters of the model are b_i, c_i, and ℓ where

$$0 < b < 1$$
$$0 < b_i < 1 \quad (i = 1,2,\ldots,N)$$
$$\sum b_i = 1.$$
$$0 < c_i \quad (i = 1,2,\ldots,N)$$

Given information on total income, the wage rate, and non-wage income, equation (6) can be estimated:

$$Y' = \alpha_o + \alpha_1 w + \alpha_2 v. \tag{7}$$

where

$$\alpha_o = b \sum_{i=1}^{N} p_i c_i$$

$$\alpha_1 = (1-b)M$$

$$\alpha_2 = (1-b)$$

and

$$b = 1-\alpha_2$$

$$\ell = T - \alpha_1/\alpha_2$$

$$\sum_{i=1}^{N} p_i c_i = \alpha_o/(1-\alpha_2).$$

Given this information, the income elasticity of the marginal utility of income w^* and its reciprocal, the money flexibility of income (ϕ) can be computed:

$$w^* = -Y'(Y' - \sum_{i=1}^{N} p_i c_i)^{-1}. \tag{8}$$

The advantage of the model is that it allows all price elasticities and the income elasticity of demand to be derived from expenditure equations estimated using data available on income and one price only. Use of the "money flexibility" parameter, describing how the marginal utility of money changes in relation to its rate of change with the level of money income held in a household, provides the basis for the estimation of price effects (Frisch 1959). Since the wage rate of individuals, or price of leisure varies in cross-section, it can be used as the varying price.

Empirical Framework. The empirical forms of the equations to be estimated are:

$$p_i q_i = p_i c_i + b_i (Y' - \sum_{i=1}^{N} p_i c_i) + e_i \tag{9}$$

where the demand equation derived in (5) has been multiplied through by the price of the ith commodity and e_i is a stochastic error term, and

$$M = (1-b)(T - \ell) + (b \sum_{i=1}^{N} p_i c_i)(1/w) + -b(v/w) + u \tag{10}$$

where equation (6) has been rewritten in terms of labor supply and u is a stochastic error term.

Seven expenditure equations and a labor hours equation are estimated. Commodity groups include Apparel, Entertainment, Food, Health care, Housing, Transportation, and Other.

Equations (11) and (12) represent in general form each of the seven expenditure equations and labor supply equation to be estimated.

$$p_i q_i = \beta_0 + \beta_i Y' + \epsilon_i \tag{11}$$

$$M = \alpha_0 + \alpha(1/w) + \alpha_2(v/w) + u \tag{12}$$

The estimated coefficients are related to the structural parameters in the following way:

$$\beta_0 = p_i c_i - b_i \sum_{i=1}^{N} p_i c_i \tag{13}$$

$$\beta_i = b_i \tag{14}$$

$$\alpha_0 = (1-b)(T-\ell) \tag{15}$$

$$\alpha_1 = b \sum_{i=1}^{N} p_i c_i \tag{16}$$

$$\alpha_2 = -b \tag{17}$$

The seven equations implied by (11) break off from (12), given the assumption of two stage budgeting. These seven equations are fitted one by one using Tobit to correct for censored sample bias since some households reported zero expenditures in certain commodity groups.

Note that the wage rate enters explicitly into equation (12). However, for many persons, the elderly especially, there are many persons not employed in the labor force, making the observed market wage equal to zero. If the system were estimated using only persons who work, sample selection bias would ensue (See Heckman 1974). Therefore, the entire sample is used to estimate the probability of entering the labor market and the sample selection factor, λ, obtained. Then, (12) is estimated using only those persons who are employed. Ordinary Least Squares regression analysis is used, including λ as an independent variable.

The variables included in the equation are those which are assumed to be associated with home and labor market productivity (Heckman 1979; Zick and Bryant 1983; Gerner and Zick 1983). Because we include an elderly sample in our estimation, a variable measuring health status is included. We construct a 0-1 dummy variable for health. If health was cited as the reason an individual was not working, the variable received a one. If any other reason was cited, or if the individual was working, the variable received a zero. Thus, the measure assumes that if individuals are employed, their health is good. The seven expenditure and hours of work equations are estimated after correcting for sample selection bias.

Data

We refer to two samples: the elderly and younger counterparts of male headed, two adult households. Sample sizes of 1123 and 2495, respectively, were drawn. Three categories, low, moderate, and high, were formed by dividing the entire sample into three equal groups based on annual income available to the households[2]: under $15,000, between $15001 and $30075, and over $35075.

Criteria for selection of the aged sample included:

1. The age of the head of household is 55 years or older and age did not change during the three quarter periods being reported;
2. the household is a "complete" income reporter[3];
3. if a member of the household was employed, enough information was provided to compute a wage rate (salary, hours worked per week, weeks worked per year);
4. the household reported expenditures in at least one of the seven categories included in the research;
5. the following information is reported: household size; number of rooms; region of the country and/or rural/urban place of residence; and race, sex and employment status of the of the reference person are reported;
6. Income or expenditures were "topcoded" (i.e., incomes over $100,000 were topcoded as $100,000);
7. deletion of those with negative total income and/or hourly wage rates less than $2 or greater than $100.

Expenditure data required special treatment. They were averaged per quarter and annualized for consistency with income. In addition, regression diagnostics were performed, and extreme values (defined by studentized residuals) were omitted. Total expenditures were used as a proxy for income for three reasons. First, some CEX respondents reported negative or zero before-tax income. Second, income reported in a given year may be an inaccurate representation of income over time. Third, total expenditures may be a better indicator of permanent income--a factor which not only has precedence by other researchers using the CEX (e.g., Chen and Chu 1982), but also, has implications for estimation of consumption coefficients. Table 1 provides summary statistics.

Table 1. Definitions and Summary Statistics

Variable	Definition	ALL	<55	>55
BLURS	Region of residence[1]	.876	.885	.856
		(.329)	(.319)	(.350)
AGER	Age of reference person	46.10	36.80	66.74
		(16.33)	(8.90)	(8.05)
EDUC1	Not completed high school	.258	.168	.457
		(.437)	(.374)	(.498)
EDUC3	Completed beyond college	.235	.273	.152
		(.424)	(.445)	(.359)
CUTEN	Homeowner	.742	.695	.845
		(.437)	(.460)	(.361)
ROOM	Number of rooms	5.965	6.02	5.843
		(1.702)	(1.743)	(1.602)
NUMAUTO	Number of automobiles	1.648	1.704	1.524
		(.984)	(.964)	(1.016)
NWINC	Non-wage income[2]	3309	2541	5015
		(6581)	(5591)	(8118)
PENSINC	Pension Income[3]	2941	5062	8352
		(6008)	(2254)	(7910)
RACE1	Percent Black	.080	.078	.083
		(.271)	(.269)	(.277)
UNEMPR	Unemployment rate[5]	7.221	7.239	7.180
		(.571)	(.564)	(.585)
FAMSIZE	Family size	3.323	3.637	2.623
		(1.327)	(1.264)	(1.191)
RACE2	Percent Asian	.037	.042	.027
		(.190)	(.200)	(.163)
KID1	Percent w/children under 18[4]	.420	.585	.055
		(.493)	(.492)	(.228)
KID1A	Oldest child <6[4]	.149	.212	.008
		(.356)	(.409)	(.093)
KID1B	Oldest child 6-17[4]	.271	.372	.046
		(.444)	(.483)	(.210)
KID2	Oldest child 18+[4]	.168	.154	.198
		(.374)	(.361)	(.399)
HEALTH	Health status[6]	.031	.014	.069
		(.175)	(.120)	(.254)
WAGE	Wage rate	9.398	11.27	5.229
		(8.426)	(7.376)	(9.095)
WAGESP	Wage of spouse	4.800	5.939	2.269
		(13.28)	(15.56)	(4.559)
INC1	Hours of work	34.66	42.90	16.37
		(19.69)	(12.36)	(20.60)
WK1	Weeks worked	37.88	46.48	18.77
		(21.19)	(12.74)	(23.58)
INCST1	Percent employed	.765	.936	.384
		(.423)	(.243)	(.486)
TEXP	Total expenditures[7]	33.7	36.5	27.5
		(.189)	(.183)	(.188)
N =		3618	2495	1123

[1] 0 if rural; 1 if urban.
[2] All income earned from non-wage sources, other than pensions and social security.
[3] All pension and social security income.

[4] Refers to children living at home
[5] Specific for region if urban; otherwise, rural.
[6] 0 if healthy; 1 if not healthy.
[7] In thousands

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[2] Critics of this approach indicate it results in a loss in variation of the income variable. Suggestions have been to divide the sample by other characteristics related to income (Betancourt 1971). Initial, unsuccessful, estimates used race, presence of children, and rural/urban designations.

[3] The Bureau of Labor Statistics defines a "complete" income reporter as one who has provided values for at least one of the major sources of income, such as wages and salaries, sef-employment income, and social security income (U. S. Department of Labor 1987, p.7).

Budget Shares

Figures 1a-i depict the share of the budget allocated to the seven expenditure categories. Older and younger households spent similar amounts for Housing. However, older households spent 19 percent more on Food and 243 percent more on Health. Older households spent 25 percent less on Entertainment, 20 percent less on Apparel, and 11 percent less on Transportation than the younger households.

When income groups are considered, the differences are less severe between age groups, but more severe among income groups. Low-income households over age 55 spent 168 percent more on Housing than high-income households

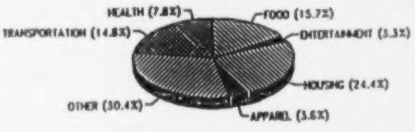
Engel's law holds for the food category As income increases, the share allocated to Food decreases. Younger households in low-income households spent 215 percent more on Food than those in high-income households. For older households, those in low-income households spet 200 percent more on Food.

As expected, older households spend more on health care. However, while the share spent on Health falls by about 32 percent as income increases for younger households, it falls 28 percent as one moves from low to middle-income, and by 60 percent as one moves from middle-to high-income.

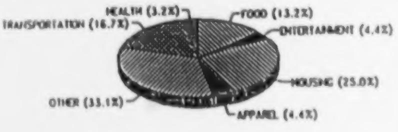
As income increases, expenditures on Transportation increase for both age groups. Apparel expenditures increase by 25 percent as older households move from low- to high- income and decrease by 10 percent as younger households move from low- to high-income.

Figures 1a-1h. Budget Shares

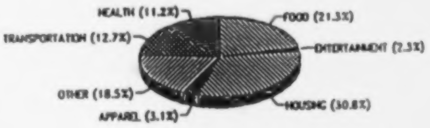
All Incomes Age ≥ 55



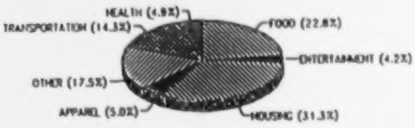
All Incomes Age < 55



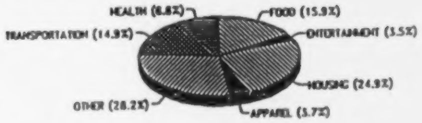
Low Income Age ≥ 55



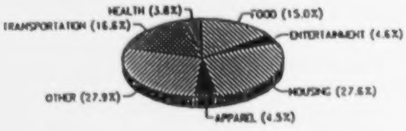
Low Income Age < 55



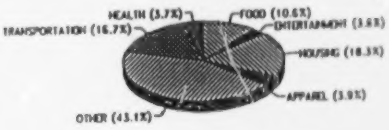
Middle Income Age ≥ 55



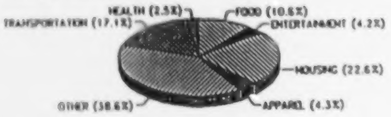
Middle Income Age < 55



High Income Age ≥ 55



High Income Age < 55



Results

Hours-of-Work Estimates

Tables 2a and 2b identify results of hours of work estimates. Most coefficients are of the expected sign and most are highly significant. As the wage rate increases, one substitutes out of leisure into labor. As non-wage income increases, one chooses to take more leisure--a normal good. The importance of correcting for sample selection bias is underscored by the fact that the coefficients on lamda, the sample selection bias correction factor, are significant in many cases. The explanatory power of the equations is higher for low- and middle-income groups, and lower for higher-income groups.

Income Effects

Income elasticities are derived from the coefficient, β_i, on the independent variable, non-wage income (Y'/w), from equation (11):

$$p_i q_i = \beta_{i0} + \beta_i Y' + \epsilon_i$$

The equation necessary to calculate the elasticities is

$$\eta_i = \beta_i / s_i$$

where

η_i = the income elasticity, i=1,2,...7
β_i = the estimated coefficient on Y'
s_i = the average budget share, i=1,2,...7

Regression results in tables 3a and 3b are used to obtain the paramaters of the structural equations, presented in Tables 4a and 4b. These are used to calculate income elasticities in Tables 5a and 5b.

Results of the estimated expenditure functions are robust. However, insignificance of the income coefficient in the Health equation was found for older persons in low-middle- and high-income categories. The most obvious explanation is that because health care is a necessity for older persons, income indeed has an insignificant effect on its consumption.

Summarizing:

- For all income groups, the higher elasticities for elderly are in Apparel, Entertainment, Transportation and Other, while they appear in Food, Health and Housing for the younger sample.
- For low-income, higher elasticities for elderly are in Apparel, Entertainment, Food and Housing, and for younger households in Health, Transportation and Other.
- For middle-income, higher elasticities exist for the elderly in Apparel, Entertainment, Food and Transportation, while they appear in Health, Housing and Other for younger households.
- For high-income, higher elasticities are shown for older households in Apparel and Transportation, but in Health for younger households, with no difference between the two samples in Housing and Other.

Price Elasticities

To calculate all uncompensated own- and cross-price elasticities, four pieces of information are necessary: income elasticities, the share of expenditures

Table 2a
Regression Coefficients for the Labor Supply Function

	< Age 55 Coefficients					
Income Group	$(1-b)(T-L)=\alpha_0$	$b\cdot\sum_i p_i c_i=\alpha_1$	$-b=\alpha_2$	Lambda	R^2	No. of observations
Low	627.18 (126.67)	7962.24 (597.00)	-.701 (.059)	-485.63 (129.72)	.56	179
Middle	1250.23 (51.12)	9194.59 (440.97)	-.417 (.021)	-285.78 (109.28)	.39	736
High	1916.38 (35.85)	7116.82 (530.21)	-.164 (.014)	330.06 (231.05)	.12	1420
All	2246.88*** (28.77)	470.15*** (232.44)	-.022*** (.011)	-1036.23*** (93.78)	.03	2234

Table 2b
Regression Coefficients for the Labor Supply Function

	≥ Age 55 Coefficients					
Income Group	$(1-b)(T-L)=\alpha_0$	$b\cdot\sum_i p_i c_i=\alpha_1$	$-b=\alpha_2$	Lambda	R^2	No. of observations
Low	220.39 (173.38)	9137.28*** (872.17)	-.630*** (.086)	-85.04 (127.89)	.72	50
Middle	778.63*** (144.29)	12780.1*** (1372.09)	-.544*** (.061)	-301.24*** (102.32)	.56	125
High	2067.09*** (72.39)	4299.69*** (1071.76)	-.102*** (.024)	-700.98*** (70.63)	.24	257
All	2148.49 (67.78)	669.54 (511.65)	-.048*** (.019)	-647.88*** (56.90)	.22	422

Table 3a

Regression Coefficients for the Expenditure Functions
< Age 55

APPAREL (Income Group)	$p_ic_i-b_i\sum_ip_ic_i-\beta_{0i}$	Coefficients $b_i-\beta_i$	Sigma	No. of observations
Low	-107.024* (59.842)	.049*** (.006)	453.029*** (14.8772)	520
Middle	430.968** (223.925)	.016* (.010)	908.794*** (30.3865)	462
High	658.384** (302.118)	.020*** (.006)	1486.38*** (64.2664)	273
All	56.31 (47.41)	.033*** (.002)	949.27*** (19.41)	1264
ENTERTAINMENT (Income Group)				
Low	-413.706*** (99.7073)	.074*** (.010)	696.428*** (25.5980)	520
Middle	25.8758 (271.396)	.042*** (.012)	1098.83*** (36.8893)	462
High	601.587** (259.201)	.019*** (.005)	1276.04*** (55.3147)	273
All	18.14 (53.22)	.035*** (.002)	1039.82*** (.002)	1264
FOOD (Income Group)				
Low	570.912*** (110.198)	.119*** (.011)	846.183*** (26.2396)	520
Middle	1719.13*** (345.501)	.044*** (.015)	1404.44*** (46.2027)	462
High	1553.86*** (339.069)	.050*** (.007)	1671.48*** (71.5328)	273
All	1229.36.*** (63.65)	.059*** (.002)	1286.72*** (25.52)	1264
HOUSING (Income Group)				
Low	395.613*** (177.804)	.262*** (.018)	1365.31*** (42.3364)	520
Middle	1723.69*** (663.989)	.175*** (.029)	2698.71*** (88.7809)	462
High	3341.84*** (983.971)	.132*** (.021)	4850.60*** (207.587)	273
All	1442.73*** (145.54)	.177*** (.006)	2942.13*** (58.51)	1264
HEALTH (Income Group)	$p_ic_i-b_i\sum_ip_ic_i-\beta_{0i}$	Coefficients $b_i-\beta_i$	Sigma	No. of observations
Low	215.710*** (72.3701)	.013* (.007)	555.710*** (17.2318)	520
Middle	562.734** (278.052)	.002 (.012)	1130.27*** (37.1830)	462
High	299.765 (245.149)	.125** (.005)	1208.49*** (51.7187)	273
All	238.28*** (47.21)	.014*** (.002)	954.49*** (18.98)	1264
TRANSPORTATION (Income Group)				
Low	-651.266*** (175.056)	.202*** (.017)	1297.67*** (42.5662)	520
Middle	-1120.85 (890.659)	.205*** (.039)	3617.76*** (119.883)	462
High	3378.09** (1726.50)	.091** (.038)	8511.00*** (364.238)	273
All	-400.19* (236.38)	.171*** (.009)	4717.39*** (95.93)	1264
OTHER (Income Group)				
Low	-721.990*** (247.767)	.332*** (.025)	1900.99*** (59.0893)	520
Middle	-3454.36*** (1192.25)	.515*** (.053)	4846.43*** (159.436)	462
High	-9873.09*** (2020.48)	.672*** (.044)	9960.21*** (426.259)	273
All	-3510.22*** (283.97)	.526*** (.011)	5737.17 (114.19)	1264

Table 3b

Regression Coefficients for the Expenditure Functions
≥ Age 55

(Income Group)	$p_ic_i-b_i\sum_ip_ic_i-\beta_{0i}$	$b_i-\beta_i$	Sigma	No. of observations
Low	-124.928 (85.217)	.049*** (.007)	460.814*** (31.988)	568
Middle	-31.2121 (123.726)	.043*** (.005)	803.917*** (16.6640)	1201
High	-20.7412 (114.441)	.042*** (.002)	1536.89*** (25.3843)	1847
All	062.82 (41.45)	.043*** (.001)	1215.24*** (14.48)	3618
ENTERTAINMENT (Income Group)				
Low	-363.970*** (96.0134)	.059*** (.008)	495.157*** (16.7932)	568
Middle	-125.702 (173.981)	.047*** (.007)	125.19*** (23.6578)	1201
High	500.335*** (143.242)	.029*** (.002)	1923.26*** (31.7935)	1847
All	-17.57 (53.94)	.039*** (.002)	1566.72 (18.96)	3618
FOOD (Income Group)				
Low	996.452*** (174.154)	.123*** (.015)	958.123*** (28.4271)	568
Middle	1542.94*** (216.753)	.081*** (.009)	1612.36*** (28.8176)	1201
High	2748.51*** (138.970)	.044*** (.002)	1867.18*** (30.7212)	1847
All	2050.67*** (55.01)	.057*** (.001)	1622.82*** (19.07)	3618
HOUSING (Income Group)				
Low	400.928* (248.209)	.270*** (.021)	1365.56*** (40.5150)	568
Middle	1659.80*** (410.996)	.190*** (.017)	2678.05*** (54.6427)	1201
High	2518.12*** (388.175)	.160*** (.007)	5215.46*** (85.8112)	1847
All	1923.92*** (138.21)	.172*** (.003)	4076.58*** (47.92)	3618
HEALTH (Income Group)	$p_ic_i-b_i\sum_ip_ic_i-\beta_{0i}$	Coefficients $b_i-\beta_i$	Sigma	No. of observations
Low	131.588 (179.972)	.073*** (.015)	990.128*** (29.3766)	568
Middle	1366.08*** (199.170)	.008 (.008)	1297.79*** (24.4801)	1201
High	912.645*** (90.3920)	.007*** (.001)	1214.49*** (19.9823)	1847
All	967.83*** (41.16)	.006*** (.001)	1214.05*** (14.27)	3618
TRANSPORTATION (Income Group)				
Low	-688.378*** (226.942)	.196*** (.019)	1232.74*** (37.8441)	568
Middle	-639.172 (477.523)	.189*** (.020)	3109.95*** (63.5236)	1201
High	2073.09*** (600.192)	.124*** (.011)	8064.09*** (132.680)	1847
All	119.97 (207.51)	.160*** (.005)	6100.2*** (72.04)	3618
OTHER (Income Group)				
Low	-841.581*** (317.253)	.260*** (.027)	1744.21*** (51.9432)	568
Middle	-3963.31*** (672.262)	.462*** (.029)	4379.54*** (89.4088)	1201
High	-8757.10*** (767.678)	.591*** (.015)	10314.4*** (169.705)	1847
All	-5308.15*** (267.66)	.528*** (.007)	7891.80*** (92.80)	3618

Table 4a

Structural Coefficients from the Labor Supply Function

	Coefficients < Age 55			
Income	b	$\sum_i p_i c_i$	$\dot{w}$	ø
Low	.706 (.059)	11282.4 (823.55)	-60.49 (836.58)	-.107 (.229)
Middle	.417 (.021)	22,030.1 (652.23)	-21.05 (83.38)	-.048 (.188)
High	.164 (.014)	43523. (2239.82)	-11.47 (.089)	-.090 (.327)
All	.026 (.011)	25660.6 (9749)	-3.36 (6.67)	-.297 (.589)

Table 4b

Structural Coefficients from the Labor Supply Function

	Coefficients ≥ Age 55			
Income	b	$\sum_i p_i c_i$	$\dot{w}$	ø
Low	.630 (.086)	14499.4 (1411.19)	2.97 (2.59)	.346 (.294)
Middle	.544 (.061)	23,480.4 (1141.42)	10.60 (22.65)	.094 (.201)
High	.102 (.023)	42,018.7 (5760.36)	-7.34 (20.23)	-.137 (.376)
All	.026 (.017)	21415 (15700)	-4.46 (18.02)	-.224 (.903)

Table 5a

Derived Coefficients for the Expenditure Functions: Income Elasticities

	Coefficients < Age 55						
Income Group	η_1 Apparel	η_2 Entertainment	η_3 Food	η_4 Health	η_5 Housing	η_6 Transportation	η_7 Other
Low	.914 (.88)	.869 (1.02)	.389 (.207)	1.709 (2.17)	.802 (.338)	1.52 (1.19)	1.62 (1.37)
Middle	.731 (.551)	.831 (.836)	.504 (.225)	2.09 (2.38)	.697 (.299)	1.01 (.799)	1.74 (1.14)
High	.996 (.706)	.849 (.776)	.415 (.174)	.352 (.365)	.772 (.361)	.671 (.625)	1.50 (.798)
All	.96 (.72)	.85 (.79)	.43 (.22)	.39 (.47)	.71 (.32)	.82 (.81)	1.58 (.87)

Table 5b

Derived Coefficients for the Expenditure Functions: Income Elasticities

	Coefficients ≥ Age 55						
Income Group	η_1 Apparel	η_2 Entertainment	η_3 Food	η_4 Health	η_5 Housing	η_6 Transportation	η_7 Other
Low	1.37 (1.40)	2.63 (3.83)	.643 (.259)	.801 (.721)	.901 (.372)	1.38 (1.04)	1.37 (1.11)
Middle	1.48 (1.52)	1.31 (1.93)	.648 (.242)	.237 (.304)	.564 (.304)	1.44 (1.33)	1.52 (1.22)
High	1.006 (.893)	.626 (.994)	.315 (.156)	.088 (.140)	.777 (.476)	.745 (.782)	1.48 (.807)
All	1.16 (1.12)	1.18 (1.19)	.36 (.18)	.06 (.07)	.58 (.30)	1.10 (1.04)	1.85 (1.36)

allocated to the good in question (for own-price elasticity), the share of expenditures allocated to another good (for cross-price elasticity), and the money flexibility parameter. The uncompensated own- and cross-price elasticities are calculated using the following formulae:

$$\eta_{ii} = -\eta_i[s_i - \phi(1-s_i\eta_i)] \qquad (12)$$

$$\eta_{ij} = -\eta_i s_j(1 + \phi\eta_j) \qquad (13)$$

where η_{ii} is the Cournot uncompensated own-price elasticity and η_{ij} is the Cournot uncompensated cross-price elasticity. The own-price elasticity must be negative, given all goods in the system are normal. The direction of the cross price elasticity can not be predicted.

Calculated own- and cross-price elasticities are presented in Tables 6a and 6b.

Once again, differences are apparent in the estimated elasticities for younger and older households. The most apparent differences in own- price elasticities are found in the magnitudes of the elasticities for Food, Health, and Housing, compared with Apparel and Entertainment. Older households tend to have more elastic responses to price changes for Apparel and Entertainment and less elastic responses to changes in prices in Food, Health, and Housing. One explanation is that the latter group of goods can be considered to be necessities, while the former group can be considered somewhat to be luxuries, assuming a current stock of clothing. Needs may also influence these results. The elderly need a higher level of health care, thus changes in

Table 6a

Derived Coefficients for the Expenditure Functions: Uncompensated Price Elasticities, η_{ij}

< Age 55

Income Group	j=	1 Apparel	2 Entertainment	3 Food	4 Health	5 Housing	6 Trans-portation	7 Other
All								
i= 1		-1.829	.029	-.016	-.0001	.094	.189	.695
2		.028	-1.791	-.015	-.0001	.092	.185	[illegible]
3		.014	.014	-.883	-.00008	.044	.089	.328
4		.015	.016	-.008	-.994	.050	.101	.372
5		.022	.022	-.012	-.0001	-1.329	.142	.524
6		.038	.039	-.021	-.0002	.125	-2.217	.924
7		.054	.055	-.029	-.0003	.175	.353	-2.174
Low								
i= 1		-.225	-.037	-.218	-.046	-.340	-.126	-.242
2		-.058	-.324	-.318	-.066	-.496	-.185	-.353
3		-.020	-.019	-.200	-.023	-.169	-.063	-.120
4		-.011	-.010	-.057	-.061	-.089	-.035	-.064
5		-.027	-.025	-.147	-.031	-.354	-.085	-.163
6		-.050	-.046	-.270	-.056	-.420	-.385	-.299
7		-.044	-.041	-.239	-.050	-.372	-.138	-.467
Middle								
i= 1		-.061	-.017	-.052	-.012	-.101	-.056	-.126
2		-.035	-.140	-.116	-.027	-.226	-.125	-.282
3		-.013	-.014	-.081	-.010	-.085	-.047	-.106
4		-.002	-.002	-.007	-.008	-.014	-.008	-.018
5		-.025	-.027	-.083	-.019	-.236	-.090	-.203
6		-.049	-.054	-.163	-.038	-.319	-.320	-.398
7		-.053	-.059	-.178	-.041	-.349	-.191	-.592
High								
i= 1		.017	-.021	-.051	-.012	-.126	-.101	-.266
2		-.022	.018	-.052	-.012	-.126	-.101	-.268
3		-.022	-.021	-.013	-.012	-.127	-.102	-.270
4		-.024	-.023	-.058	.030	-.141	-.113	-.301
5		-.024	-.023	-.057	-.013	-.096	-.111	-.295
6		-.020	-.019	-.048	-.011	-.118	-.058	-.251
7		-.060	-.057	-.144	-.032	-.035	-.281	-.638

Table 6b

Derived Coefficients for the Expenditure Functions: Uncompensated Price Elasticities, η_{ij}

≥ Age 55

Income Group	j=	1 Apparel	2 Entertainment	3 Food	4 Health	5 Housing	6 Trans-portation	7 Other
All								
i= 1		-.219	-.035	-.135	-.047	-.227	-.138	-.240
2		-.033	-.206	-.127	-.044	-.214	-.131	-.226
3		-.014	-.014	-.126	-.018	-.090	-.055	-.094
4		-.005	-.005	-.018	-.031	-.031	-.019	-.032
5		-.024	-.023	-.090	-.031	-.273	-.092	-.160
6		-.034	-.033	-.129	-.045	-.216	-.307	-.228
7		-.056	-.054	-.216	-.073	-.356	-.217	-.664
Low								
i= 1		-.063	-.047	-.289	-.117	-.420	-.191	-.257
2		-.083	-.108	-.436	-.176	-.633	-.287	-.387
3		-.025	-.021	-.077	-.052	-.189	-.086	-.116
4		-.037	-.032	-.198	-.001	-.287	-.130	-.176
5		-.038	-.032	-.202	-.081	-.210	-.133	-.180
6		-.064	-.055	-.339	-.137	-.492	-.085	-.301
7		-.063	-.054	-.333	-.134	-.484	-.220	-.160
Middle								
i= 1		-.040	-.044	-.157	-.056	-.274	-.164	-.288
2		-.047	-.044	-.169	-.060	-.295	-.177	-.310
3		-.023	-.023	-.081	-.029	-.143	-.086	-.151
4		.006	.006	.023	.008	.040	.024	.042
5		-.030	-.031	-.109	-.039	-.189	-.115	-.201
6		-.050	-.051	-.181	-.065	-.316	-.187	-.333
7		-.070	-.070	-.252	-.090	-.441	-.265	-.460
High								
i= 1		-.123	-.039	-.104	-.028	-.206	-.161	-.348
2		-.028	-.088	-.074	-.020	-.147	-.115	-.250
3		-.016	-.016	-.077	-.011	-.085	-.066	-.143
4		-.010	-.010	-.026	-.029	-.053	-.041	-.089
5		-.028	-.028	-.076	-.020	-.212	-.118	-.255
6		-.028	-.028	-.076	-.020	-.149	-.178	-.252
7		-.058	-.058	-.154	-.041	-.306	-.240	-.643

consumption may vary less with changes in the price of health care. The elderly may also be on special diets more often than the non-elderly, and their choice of food limited. Finally, preferences may play a role. The elderly may be unwilling or unable to relocate to different housing if prices change. Or, they may be more set in their food patterns, unwilling to change them as prices change. It should be noted that such interpretations are made with caution due to the fact that the expenditure classifications contain, in some cases, hundreds of individual products and services. Without disaggregation of the data, it cannot be assumed what specific components contribute to price elasticities.

It is also important to recognize that 7 of the 56 own-price elasticities calculated were of the wrong sign, positive instead of negative, all for the older group. These results are found mostly for the lower income categories. These results are not unexpected, as they are calculated using the computed money flexibility parameter, ϕ, which was found to be the wrong sign most often for low-income groups.

In the system estimated, most of the calculated cross-price elasticities are negative, indicating that the goods are gross complements. Almost without exception, the calculated cross-price elasticities are higher for the older groups. This simply indicates that a change in the price of a good affects spending on other goods to a greater extent for older versus younger households.

Discussion

Methodology

Given virtually no access to price information in cross section micro data implies that in order to estimate price elasticities at all, the methodology is the only one available at this time. In evaluating the methodology used, several strengths and weaknesses can be identified. First, in the absence of abundant price data, price elasticities for all commodities in the system can be derived. However, because the elasticities are calculated using parameters other then those for actual prices and income, calculation of standard errors of the estimates are difficult and overstate the true size of the error. To the extent that significant results are found using upwardly biased standard errors, one can be assured the results are truly significant.

Second, the methodology is fairly simple. We did introduce two complications into the system to improve the results: correction for sample selection and censored sample biases. Because each of the commodites is entered into the utility function additively, the system could be estimated equation by equation. However, the approach only works for aggregated commodities.

Third, comparison of groups is easy. Though it may be argued that the system does not adequately address price elasticity estimates because they are derived from estimated parameters, it does allow comparison across groups. Estimated price elasticities appear to be similar to some others estimated using an additive system, but are smaller than those estimated using non-additive systems (Abbot and Aschenfelter 1978).

Fourth, the methodology works well for many groups. The money flexibilily parameter was negative for six of eight groups. Forty-seven of fifty-four own price elasticities were negative. Estimates with the wrong sign are suspect since they rely on money flexibility estimates which were of the wrong sign.

Expenditures

While this paper emphasizes improvements on a methodology used to estimate price effects, the results suggest policy implications. Examination of income elasticities reveals they are lower for high-income groups. This suggests that no additional consumption is desired, and an increase in income may be allocated to savings. Second, elasticities tend to decrease from low- to high-income groups; however, several middle-income groups have higher elasticities than low-income groups.[4]

As for responsiveness to price changes, our estimates strongly suggest that older persons have less flexibility in their consumption of necessities (Housing, Health and Food) than do younger persons. And, their consumption of any commodity is affected by a change in price to a greater extent than that of younger persons. We suggest policy considerations for housing and health.

The problem of housing affordability among young couples at moderate-income levels is well documented. One frequently quoted statistic is that whereas half of middle-income couples were able to finance a home purchase in 1965, only one-third were able to do so in 1985. If this trend continues to the extent that this group is excluded from homeownership, a greater percentage of older renters will force expenditures on housing to larger proportions of budgets for older persons, as mortgages will not be paid off. Some creative programs in existence at the state and community levels offer subsidies for home mortgage financing and organize community land trusts. These show promise for ameliorating the housing affordability problem. Nonetheless, a view toward long-term ramifications of homeownership limited to the upper-income, in terms of its impact on future older citizens, underscores the need for expanding these programs as well as devising new solutions to the housing crisis.

The difference in size of the income elasticities for Health indicates that since the elderly share of income is already higher towards Health, as income increases there is less likely to be substitution into Health expenditures. In a study based on the 1972-73 Consumer Expenditure Survey, Schrimper and Clark (1985) examined how budget shares vary among elderly households when increases in

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[4] Betancourt's (1971) explanation for this latter outcome is that consumers substitute for better quality within the commodity group.

Health Care outlays are introduced into the expenditure system. Their results suggested that readjustments would occur in consumption of food, housing and transportation, noting that the effect would have serious negative consequences on most sectors of the economy. They also note an effect that has important implications for the elderly *per se*--i.e., the potential of reductions in expenditures for food and housing to, in fact, result in a deterioration of physical well-being in terms of meeting adequate nutritional levels, comfort and shelter. We analyzed household composition and income levels as variables to find wide variations in Health Care allocations (1.7 percent for one-adult male households under age 55 at mid- and high-income levels, and 12 percent for two-adult households age 55 and over at the low-income level). These results lend credence to the concern that these categories have little flexibility in budgets of elders and support the findings of others.

References

Ando, A., & Modigliani, F. (1963) The Life-Cycle Hypothesis of Savings: Aggregate Implications and Tests. *American Economic Review*, *54*, 55-84.

Becker, G. (1965) A Theory of the Allocation of Time. *The Economic Journal*, *75*, September, 493-517.

Betancourt, R. (1971) The Estimation of Price lasticities from Cross-Section Data Under Additive Preferences. *International Economic Review*, *12*(2), 283-292.

Bridges, B. & Packard, M. (1981) Price and Income Changes for the Elderly. *Social Security Bulletin*, *44*(1), 3-15.

Chen, & Chu (1982) Household Expenditure Patterns: The Effect of Age of Family Head. *Journal of Family Issues*, *3*(2) 233-50.

Danziger, J.E.H., Henry, D.F., Srba, F. & Yeo, S. (1978) Econometric Modeling of Aggregate Time-Serices Relationships Between Consumers Expenditure and Income in the United Kingdom. *The Economic Journal*, *352*(88), 661-92.

Deak, E.J. & Smith, W.J. (1979) Inflation and the Elderly. *Aging*, (September-October), 4-12.

Duncan, G. (1984) *Years of poverty, years of plenty*. Ann Arbor: Survey Research Center.

Frisch, R. (1959) A Complete Scheme for Computing All Direct ad Cross Demand Elasticities in a Model with many Sectors. *Econometrica*, *27*, 177-96.

Fuchs, V. (1983) *How we live*. Cambridge: Harvard University Press.

Hammermesh, D. (1984) Life-Cylce Effects on Consumption and Retiremen. *Journal of Labor Economics*, *2*(3), 353-70.

Heckman, J. (1974) Shadow Wages, Market Wages, and Labor Supply. *Econometrica*, *42*(4), 649-94.

Heckman, J. (1979) Sample Selection Bias as a Specification Error. *Econometrica*, *47*(1), January, 153-61.

Johnson, S., Hassan, Z. & Green, R. (1984) *Demand system estimation: Methods and applications*. Ames, IO: The Iowa State University Press.

McConnell, & Deljavan (1983) Consumption Patterns of the Retired Household. *Journal of Gerontology*, *38*(4), 480-90.

Schrimper, R.A. & Clark, R.C. (1985) Heath Expenditures and Elderly Adults. *Journal of Gerontology*, *40*(2), 235-43.

U.S. Bureau of the Census (1988) *Statistical Abstract of the United States.* Washington D.C.: U.S Government Printing Office.

Gender Differences in Coping Styles

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In this rural sample of 423 adults, there were no differences in scores for perceived stress by gender. The number of stressors and scores for coping styles were significantly different for men and women. Gender bias was detected in one instrument which has been extensively used in the assessment of coping styles. Applications for the study of stress and coping in a consumer behavior context are recommended.

Introduction

Women have been gainfully employed in a variety of situations throughout time. In this century they have been drawn into the labor force by three contingencies: economic need, the availability of work, and the freedom to work. For many women, employment roles have enabled them to develop increased self confidence and economic freedom. On the other hand, women sometimes find that employment is an economic burden they cannot give up --- the rising cost of living in the United States has created a need for both spouses in a family to work in order to purchase the basic necessities of life.

Although married women's labor force participation and approval of it have increased rapidly, the household division of labor has changed slowly (Ross, Mirowsky & Huber 1983). For women with children, the strain of being a mother, housewife, purchasing agent, and bread-winner may be manifest in increased levels of stress. In some situations, families can hire help to alleviate some of the role strain experienced by the multiple roles of both spouses. However, many families do not have the economic resources needed to hire outside help. As occupational commitments increase, both men and women experience a time deficit (McKitric 1984).

Stress and Coping

Multiple roles and a time deficit can produce stress which influences the entire family system (Kingston & Nock 1985). In order to maintain productive and satisfying lives, men and women need to improve stress management by identifying and using effective coping styles (Billings & Moos 1981).

Men and women are stressed by different situations. Researchers Billings and Moos (1981,1984) found that men were most likely to say that economic factors, work and dissatisfaction with spouse were associated with stress. A negative home environment, family strains and illness of children were stressors for women. Fram & Axelrod (1990) found that shopping (the purchasing agent role) is an increasing source of stress for wives in dual earner families since women are still responsible for most of the shopping and are the main buyers of services.

Assessment of Coping Styles

Gender differences in coping responses to stressors have also been reported (Billings & Moos 1984; Crawford 1990; Folkman & Lazarus 1980; Haldeman & Crawford 1990; Holahan & Moos 1985). In the studies of Billings and Moos (1981,1984) it was reported that stress levels and coping styles differ between men and women and that men were more likely than women to use the coping styles which are believed to be most effective. The researchers reported that men used more problem focused coping and women used more emotion focused coping. Other researchers have reported that men have been taught to emphasize instrumental, analytic problem solving skills, while women have been socialized to be more emotionally sensitive, expressive, and dependent than men (Folkman & Lazarus cf. Bakan 1966; Bem 1974; Parsons & Bales 1955).

Although it has been assumed that rational consumers use effective coping styles to combat the stressors of the market place, recent research provides evidence that this may not be the case. Fram and Axelrod 1990 reported that many people shop where it is convenient and fast (avoidance techniques) rather than planning ahead, making lists, shopping for lower prices or greater selection (problem solving strategies).

Although there is no clear consensus on the conceptualization and measurement of the components of coping, the Coping Responses Indices developed by Billings and Moos (1981; 1984a) have been widely used in research studies of coping responses in both clinical and community populations (e.g., Billings & Moos 1985; Cooper, Russell, & George 1988; Holahan & Moos 1987; Koenig, George, & Siegler 1988; O'Neill & Zeichner 1985; Thompson,

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Gallagher, & Steinmetz Breckenridge 1987). No studies of coping styles associated with consumer behavior were found.

In developing their coping scale, Billings and Moos drew on theoretical analyses and a critical review of existing empirical literature. They reported (Billings & Moos 1984 p. 879) that they preferred using that approach rather than psychometrics.

Haldeman and Hilton (1987) used the Billings and Moos scale in their study of stress and coping in nonmetropolitan areas of Nevada. Since the scale had been developed initially for an urban, clinical population, the researchers ran a factor analysis using the data from the rural Nevada study to verify the validity of the instrument. Three factors were identified by the empirical analysis: Internal Problem Solving Coping, External Interactive Coping, and Avoidance Coping. The factors were similar to the constructs identified by Billings & Moos (Table 1), but the differences (including the number of items included in each factor) warranted further investigation.

TABLE 1
A Comparison of Two Coping Indices

	ITEM	BILLINGS - MOOS TYPOLOGY	HILTON - HALDEMAN MARTIN TYPOLOGY
1.	Prayed for guidance and/or strength	ACC[1]	Did not load
2.	Prepared for the worst	ACC	Did not load
3.	Tried to see the positive side of the situation	ACC	IPSC[2]
4.	Considered several alternatives	ACC	IPSC
5.	Drew on my past experiences	ACC	IPSC
6.	Took things a day at a time	ACC	IPSC
7.	Tried to be more objective	ACC	IPSC
8.	Went over the situation in my mind to try to understand it	ACC	IPSC
9.	Told myself things that helped me feel better	ACC	IPSC
10.	Made a promise to myself that things would be different next time	ACC	AC[3]
11.	Accepted it -- nothing could be done	ACC	Did not load
12.	Tried to find out more about the situation	ABC[4]	EIC[5]
13.	Talked with spouse or other relative about the problem	ABC	EIC
14.	Talked with friend about the problem	ABC	EIC
15.	Talked with professional person (e.g., doctor, lawyer, clergy)	ABC	EIC
16.	Got busy with other things to keep my mind off the problem	ABC	IPSC
17.	Made a plan of action and followed it	ABC	IPSC
18.	Tried not to act too hastily or follow my first hunch	ABC	IPSC
19.	Got away from things for a while	ABC	IPSC
20.	I knew what had to be done and tried harder to make things work	ABC	Did not load
21.	Let my feelings out somehow	ABC	EIC
22.	Sought help from persons with similar experiences	ABC	EIC
23.	Compromised to get something positive from the situation	ABC	Did not load
24.	Tried to reduce tension by exercising more	ABC	Did not load
25.	Took it out on other people when I felt angry or depressed	AC	AC
26.	Kept my feelings to myself	AC	Did not load
27.	Avoided being with people in general	AC	AC
28.	Refused to believe that it happened	AC	AC
29.	Tried to reduce tension by drinking more	AC	AC
30.	Tried to reduce tension by eating more	AC	AC
31.	Tried to reduce tension by smoking more	AC	Did not load
32.	Tried to reduce tension by taking more tranquilizing drugs	AC	Did not load

[1] Active Cognitive Coping
[2] Internal Problem Solving Coping
[3] Avoidance Coping
[4] Active Behavioral Coping
[5] External Interactive Coping

The coping style typology derived by Hilton, Haldeman and Martin (1990) is analogous to the hierarchy of consumer participation (Hyman 1990). The use of avoidance coping strategies could identify individuals as dependent consumers who let others (e.g. sellers) make their purchase decisions for them, or as nondecision makers who may go without a product or service rather than take action.

Those who use internal problem solving coping strategies could be identified as active consumers. They make their own decisions based on information from one or more sources. And, those who use the external interactive coping style could be identified as consumer influentials or those who have learned to use previous marketplace experiences of themselves and others to solve current consumer problems.

Methodology

The presence of gender differences in stress and coping has been identified in previous research (Billings & Moos 1984; Holahan & Moos 1985; Folkman & Lazarus 1980; Crawford 1990; Haldeman & Crawford 1990). The purpose of this study was to examine gender differences in the use of coping responses using Billings and Moos Coping Response Indices and Hilton, Haldeman, and Martin's (1990) factor analyzed indices.

Data for this study were taken from the Nevada portion of the Agricultural Experiment Station Regional Research Project W-167, "Coping with Stress: Adaptation of non-metropolitan families to socioeconomic change". Telephone directories from eleven rural communities were used to select a random sample of 881 households. Using the Dillman method of survey research (Dillman 1978) data were collected using a fifteen- page, nine-part questionnaire. Of the 881 questionnaires mailed, 423 were returned and usable for a response rate of 49 percent. This study used questions from four of the nine sections of the questionnaire.

Instrumentation

The section titled "How You Feel" was used to establish a stress score for each subject. Respondents were asked to indicate how often in the past month they had experienced each feeling described on the questionnaire. Response categories and scoring for each category were: Never (0), Almost Never (1), Sometimes (2), Fairly Often (3), or Very Often (4). Responses to the fourteen items were summed to produce a stress score.

The "Facing Problems" section was the Moos Coping Scale and assessed the coping styles used by the respondents. Subjects were asked to think about the problems they had dealt with in the past year and then to indicate how frequently they had used each of the 32 listed actions in dealing with their problems. A Likert-type scale was used with NEVER scored as 0; YES, Once or Twice scored as 1; YES, Sometimes scored as 2; and YES, Fairly Often scored as 3. Responses for items identified with each coping style were scored and the calculated sum for each style was used in the analyses.

For the Billings & Moos configuration, the total possible score for Active Cognitive Coping was 11; for Active Behavioral Coping was 13; and for Avoidance Coping was 8. For the Hilton, Haldeman, and Martin configuration, the total possible score for Internal Problem Solving Coping was 11; for External Interactive Coping was 6; and for Avoidance Coping was 6.

The section titled, "Recent Events" was adapted by the technical committee from similar instruments used in previous research. From a list of 23 life events, subjects indicated whether or not each event had occurred within the previous 12 months. The total number of events experienced in the past year was the Recent Events score. For this analysis, the 22 stressful events were conceptually grouped into six sets. The first set included problems related to death; another set included problems within the family; the third set included social problems; the problems in the fourth set dealt with illness; problems in set five related to changes in family membership; and the sixth set of problems were financial in nature (Table 2).

In the section titled "You and Your Family", respondents gave demographic information. Information included gender, level of income, level of education, marital status, and the number of years they had lived in the community.

Description of the Sample

A total of 423 respondents were included in this study. Of the 423, 226 were male and 195 were female (two respondents failed to indicate their gender). Respondents had lived in their community for a mean of 19.2 years. The mean age of the respondents was 49.5 years of age, and the median age was 48.8 years of age.

Household income ranged from less than $14,999 to over $40,000. There were four income strata. There were 79 people (23 percent) who reported an annual before tax income of less than $14,999;

71 (21 percent) reported that their household income was between $15,000 and $24,999; 94 (28 percent) reported it to be between $25,000 and $39,999; and 63 (18 percent) reported an annual before tax income of over $40,000 or more.

Table 2

Identification of Sets of Events

	Events	Name
	I	I
1.	Spouse/Partner Died	
2.	Child Died	Death
3.	Other Family Member Died	
4.	A Close Friend Died	
	II	II
1.	Divorce	
2.	Separation	
3.	Difficult Arguments with Spouse	Family Problems
4.	Difficult Arguments with Children	
5.	Family Moved When All Did Not Want to Move	
	III	III
1.	Court or Jail for Self or Family Member	
2.	Difficult to Resolve Arguments with Others (Not Family)	Social Problems
3.	Victim of Violence	
	IV	IV
1.	Serious Illness or Injury - Self	
2.	Serious Illness or Injury - Family Member	Illness
3.	Mental Illness or Substance Abuse	
	V	V
1.	Married	Family Status
2.	Reconciliation	
3.	New Family Member	
	VI	VI
1.	Lost Job	
2.	Retired	Finance
3.	Serious Financial Problems	
4.	Changed Jobs	

Of the 256 who were married, 187 (55 percent) reported that their current marriage was their first marriage. The mean length of marriage was 22.13 years and the median length of marriage was 18.39.

Of the 423 respondents 56 (13.2 percent) had not attended high school; 102 (24.1 percent) had finished high school; 175 (41.4 percent) had completed some education beyond high school; and 82 (19 percent) had a bachelor's or advanced degree. Eight individuals (1.9 percent) did not respond to the question regarding educational level.

Results of the Statistical Analyses

Gender Differences in Stress and Stressful Events

The mean score for perceived stress for males was 20.51 and for females it was 22.20. The difference was not statistically significant (F = 3.808; 1 and 419 d.f.; p = .0517).

There were 86 men and 97 women in the study who had experienced stressful events. The men had experienced fewer stressful events in the previous year than the women. The mean number of events experienced by the men was 1.4651 and for women the mean number was 1.7938. In a oneway analysis of variance, the difference was found to be significant (F = 5.029; 1 and 181 d.f.; p = .0261).

Gender Differences in Use of Coping Styles (Moos Indices)

Of the 226 men in the study, 214 (94.2 percent) used the Active Cognitive Coping style (ACC) as assessed by the Moos Coping Indices. The mean score for ACC for men was 18.3 (possible range = 0-33). One hundred eighty-six of the 195 women in the study (95.4 percent) used this coping style and had a mean score for ACC of 19.36. There was no significant difference in the use of ACC by men and women (F = 3.211; 1 and 419 d.f.; p = .0739).

Two hundred sixteen men (95.6 percent) and 182 women (93.3 percent) used the Active Behavioral Coping style (ABC). Although the percentage of men using the ABC style was higher than the percentage of women using the style, men's scores on this scale were lower than those for women (mean score for men = 18.20; mean score for women = 19.96; possible range = 0 - 39). The difference in the use of the Active Behavioral Coping Style by gender was statistically significant (F = 5.681; 1 and 419 d.f.; p = .0176).

Of those who used Avoidance Coping (Moos indices), 216 were men (95.6 percent) and 186 were women (95.4 percent). The possible range in scores was 0 - 24. Men had a mean score of 4.78 and the mean score for women was 4.71. The difference in use of Avoidance Coping was not statistically significant (F = .051; 1 and 419 d.f.; p = .8211).

When the Moos indices were used to assess use of coping styles, only one style was found to be significantly different for men and women: Active Behavioral Coping. Although a greater proportion of the men used this coping style, the mean score for women was higher than for men, indicating that women used this coping style more frequently than men.

Gender Differences in Use of Coping Styles (HHM Indices)

When the Hilton, Haldeman and Martin (HHM) indices were used to assess differences in the use of coping styles by men and women, there were significant differences for two out of the three styles.

Of all respondents, 211 men (93.4 percent) and 181 women (92.9 percent) used the Internal Problem Solving Coping (IPSC) style. The possible range in scores was 0 - 33. Men had a mean score of 21.92 and the mean score for women was 22.45. There was no statistically significant difference in the use of the IPSC style by gender (F = .419; 1 and 419 d.f.; p = .5178).

The External Interactive Coping style was used by 218 men (96.5 percent) and 187 women (95.9 percent). The possible range in scores was 0 - 18. Although proportionately fewer women use the EIC style, their scores are higher than those of the men (mean EIC scores for men = 9.23; women = 10.96). The difference in use of EIC by gender is statistically significant (F = 14.871; 1 & 419 d.f.; p = .0001).

There were 217 men (96.4 percent) and 189 women (96.9) women who used Avoidance Coping (AC) as measured by the HHM indices. The possible range in scores was 0 - 18. Although nearly the same proportion of men and women used this coping style, scores for men were lower than those for women (mean scores for men = 4.33; women = 4.96). For this study, the difference in the use of AC is significant by gender (F = 4.39; 1 and 419 d.f.; p = .0367).

Since the number and nature of problems experienced by men and women differ, a hierarchial multiple regression analysis was run with the set of coping scores entered first in a stepwise manner, and the set of scores for types of problems entered next. A separate analysis was run for each coping typology.

When the Billings and Moos indices were used for men, only avoidance coping had a beta that was statistically significant. Of the six sets of stressful events, two (family problems and family status) did not enter into the full regression model. Avoidance coping alone explained 20.22 percent of the variance in coping scores (Table 3).

For women, avoidance coping, family problems and financial problems had statistically significant betas. These variables combined to explain 20.56 percent of the variance in women's stress scores when the Billings and Moos Coping indices were used (Table 4).

Table 3

Hierarchial Multiple Regression Analysis of Coping Style and Type of Problem on Stress (Billings & Moos/Men)

Variable	Beta	F/Sig	R²	R² Change
AC*	1.054	40.954/.000	.2022	.2022
ACC	- 0.167	1.511/.221	.2141	.0120
ABC	0.002	.004/.984	.2142	.0001
Illness	2.323	3.231/.074	.2300	.0158
Death	- 0.728	0.232/.630	.2310	.0010
So. Pr.	0.757	0.185/.668	.2315	.0006
Fin	- 0.337	0.077/.781	.2319	.0003
(Constant)	17.158	104.600/.000		

F = 7.59; p = .000
* Significant at p = .05

Table 4

Hierarchial Multiple Regression Analysis of Coping Style and Type Problem on Stress (Billings & Moos/Women)

Variable	Beta	F/Sig	R²	R² Change
AC*	1.005	26.129/.000	.1437	.1437
ACC	- 0.254	2.285/.133	.1764	.0327
ABC	- 0.154	1.060/.305	.1767	.0003
F. Prob.*	4.073	6.109/.015	.2292	.0525
Illness	2.468	3.660/.058	.2600	.0308
Death	2.99	3.560/.061	.2819	.0220
Finance*	2.427	4.039/.047	.3013	.0194
So. Prb.	- 1.404	0.503/.479	.3041	.0028
Fm. Sts.	- 0.359	0.026/.871	.3043	.0001
(Constant)	22.107	81.866/.000		

F = 6.22; p = .000
* Significant at p = .05

Using the HHM indices for men, avoidance coping (AC), internal problem solving coping (IPSC) and illness all had statistically significant betas, however finance and death did not enter the full regression model. For men, avoidance coping, and IPSC combined to explain 21.80 percent of the variance in stress scores (Table 5).

When the analysis was run using the data for women, AC, IPSC, and family problems had statistically significant betas. These three variables explained 28.25 percent of the variance in women's stress scores (Table 6).

Table 5
Hierarchial Multiple Regression Analysis of Coping Style and Type Problem on Stress (HHM/Men)

Variable	Beta	F/Sig	R^2	R^2 Change
Avoid*	1.253	42.470/.000	.1795	.1795
IPSC*	- 0.270	9.003/.003	.2180	.0386
EIC	0.092	0.264/.608	.2207	.0026
Illness	2.399	3.854/.051	.2401	.0194
So. Prob.	1.223	0.278/.599	.2406	.0004
F. Prob.	- 0.551	0.148/.701	.2412	.0006
Fm. Sts.	- 0.401	0.042/.839	.2414	.0002
(Constant)	19.066	136.444/.000		

F = 7.999; $p = .000$
* Significant at $p = .05$

Table 6
Hierarchial Multiple Regression Analysis of Coping Style and Type Problem on Stress (HHM/Women)

Variable	Beta	F/Sig	R^2	R^2 Change
Avoid*	1.234	31.843/.000	.1712	.1712
IPSC*	- 0.421	12.878/.000	.2515	.0803
EIC	0.027	0.016/.899	.2574	.0059
F. Prob.*	3.477	4.729/.032	.2883	.0309
Death	2.706	3.102/.081	.3111	.0229
Finance	2.036	3.063/.082	.3266	.0155
Illness	1.737	1.835/.178	.3358	.0091
So. Prb.	-1.212	0.394/.531	.3379	.0021
Fm. Stat.	-0.796	0.136/.731	.3386	.0007
(Constant)	23.170	93.614/.000		

F = 7.27; $p = .000$
* Significant at $p = .05$

Conclusions

In this rural community sample, there is evidence that for both men and women, the Hilton, Haldeman and Martin coping indices (which were empirically derived) are more effective than the original indices in the prediction of stress scores. The differences in the percent of variance explained by coping styles are the greatest for women which provides some evidence of a gender bias in the conceptually derived indices.

Increases in scores for Avoidance Coping for both sets of indices were associated with increases in stress scores for both men and women. The major difference in the two sets of indices is that when the HHM indices are used to analyze differences in the use of coping styles by gender, a significant difference in the use of avoidance coping by gender is identified. The HHM indices narrow the definition of avoidance coping making the behaviors easier to identify.

Although not statistically significant in predicting stress scores, increases in scores for External Interactive Coping were associated with increases in stress. In this study proportionally more men than women used the EIC style, although coping scores indicated that women use the style more frequently than men. Other researchers have indicated that women are more likely than men to use an interactive coping style, however, those reports did not indicate that it was the frequency of use that was greater.

Contrary to previous research, this study found no significant difference by gender in the use of a problem solving coping style. This difference in findings could be an artifact of the differences between rural and urban samples. As in previous research, increased use of problem solving coping strategies was associated with decreases in stress scores.

Increases in scores for AC and EIC are associated with increases in stress scores, and scores for IPSC are associated with decreases in stress scores. Individuals in more stressful situations (such as dual earner families) may be unable to rely solely on internal resources and may be using additional strategies in an attempt to cope with their problems. Although there is an inverse association between IPSC and coping scores, it may be the stressful situation that is controlling the coping style rather than a particular coping style resulting in increases or decreases in stress.

This research provides evidence that the associations among types of stressful events, stress, and coping need further investigation. Of prime importance would be to factor analyze the stressful events to provide empirically derived sets of problems. Stressful situations faced by consumers in the market should also be included in any analysis including stressful events. Since shopping has been found to be an increasing source of stress for wives (Fram & Axelrod, 1990), this could be a missing factor which may explain more of the variance in stress scores.

Recommendations for Future Research

As the pace of life accelerates and as shopping moves from a social activity to a stressful event, individuals need to acquire coping strategies that help them become efficient and effective consumers. Researchers can contribute to the body of knowledge of consumer behavior by using tested instruments that are free (as far as possible) of gender bias to assess coping strategies in association with consumer efficiency and satisfaction. The evidence from this study provides indication that the Moos Coping Scale, when revised as defined by the Hilton, Haldeman, and Martin empirical study, could be used effectively in testing Hyman's (1990) conceptualization of consumer coping styles. When it can be shown that styles of coping carry over from personal life to the market place, the results of this study will contribute to evidence of a need for individuals to learn to use coping styles that will be efficacious throughout their lives.

References

Billings, A.G. & Moos, R.H. (1981). The role of coping responses and social resources in attenuating the stress of life events. Journal of Behavioral Medicine, 4, 139-155.

Billings, A.G. & Moos, R.H. (1984). Coping, stress, and social resources among adults with unipolar depression. Journal of Personality and Social Psychology, 48, 877-891.

Cooper, L.M., Russell, M., & George, W.H. (1988). coping, expectancies, and alcohol abuse: A test of social learning formulations. Journal of Abnormal Psychology, 97, 218-230.

Crawford, L.C. (1990). Gender Differences in Stress and Coping Style. Unpublished Master's Thesis, University of Nevada, Reno, NV.

Dillman, D.A. (1978). Mail and Telephone Surveys. New York: John Wiley and Sons.

Folkman, S., & Lazarus, R.S. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behavior, 21, 219-239.

Fram, E.H. & Axelrod, J. (1990). The distressed shopper. American Demographics, 12(10), 44-45.

Haldeman, V.A. (1989). Stress and the rural elderly: An analysis of determinants. Papers of the Western Region Home Management Family Economics Educators, 4, 1-6.

Haldeman. V.A., & Crawford, L.C. (1990). Coping and leisure: an analysis of associations. Critical Issues: A Nevada Perspective. Reno: University of Nevada, Reno; College of Ag.

Haldeman, V.A. & Peters, J.M. (1988). Using resistance resources to manage tension and reduce stress: A study of rural residents of isolated Nevada communities. Lifestyles: Family and Economic Issues, 9(4), 367-386.

Hilton, J.M., Haldeman, V.A., & Martin, S.K. (1990). "Factor structure of the 'coping response indices from the health and daily living form'." Reno, NV: University of NV; HDFS Working Paper #90-9.

Holahan, C.J., & Moos, R.H. (1985). Life stress and health; Personality, coping, and family support in stress resistance. Journal of Personality and Social Psychology, 49, 739-747.

Holahan, C.J., & Moos, R.H. (1987). Personal and contextual determinants of coping strategies, Journal of Personality and Social Psychology, 52, 946-955.

Hyman, D. (1990). The hierarchy of consumer participation. Knowledge and proficiency in telecommunications decision making. Journal of Consumer Affairs, 24(1), 1-23.

Kingston, R.W., & Nock, S.L. (1985). Consequences of the family work day. Journal of Marriage and the Family, 47(3), 619-629.

Koenig, H.G., George, L.K., & Siegler, I.C. (1988). The use of religion and other emotion-regulating coping strategies among older adults. The Gerontologist, 28, 303-310.

McKitric, E.J. (1984). Assuming multiple roles: The time crunch. Unpublished master's thesis, Bowling Green State University, Bowling Green, OH.

O'Neill, C.P. & Zeichner, A. (1985). Working Women: A study of relationships between stress, coping and health, Journal of Psychosomatic Obstetrics and Gynaecology, 4, 105-116.

Ross, C.E., Mirowsky, J., & Huber, J. (1983). Dividing work, sharing work and in-between: Marriage patterns and depression. American Sociological Review, 48, 809-823.

Thompson, L.W., Gallagher, D. & Steinmetz Breckenridge, J. (1987). Comparative effectiveness of Psychotherapies for depressed elders, Journal of Consulting and Clinical Psychology, 55, 385-390.

A TEST OF THE RISK-VULNERABILITY HYPOTHESIS

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Abstract

Univariate and multivariate analyses were used to test the risk-vulnerability hypothesis first proposed by Bashshur and Metzner (1970). The risk-vulnerability hypothesis consolidates economic and medical considerations to posit that those who feel themselves to be more vulnerable, either economically or medically, are the ones most likely to enroll in a health maintenance organization (HMO) (Berki et al. 1978). Based on the univariate analysis, One-Way Anovas, the risk-vulnerability hypothesis was rejected, while the logistic regression analysis supported it.

Introduction

In recent years, growing concern over rising health care costs has led to the exploration of a variety of options to control spending for health care (Varner and Christy 1986). In the United States, there has been an increased reliance on market forces to contain health care costs. One approach concentrates on increasing competition among health care plans (Enthoven 1980; McClure 1980) and increasing consumer choice employers are offering employees revised, flexible, "innovative" health plans. As a result, most employees can choose between at least two health care plans (Garland et al. 1989).

Purpose

The purpose of this research was to replicate previous studies concerning consumer decision-making when individuals are faced with several comprehensive health insurance alternatives. The replicated studies include those conducted by Bashshur and Metzner (1970); Bice (1975); Tessler and Mechanic (1975); Berki, Penchansky, Fortus, and Ashcraft (1987); Scitovsky, McCall, and Benham (1978); Juba, Lave, and Shaddy (1980); Grazier, Richardson, Martin, and Diehr (1986); Merrill, Jackson, and Reuter (1985); and Welch and Frank (1985). The risk-vulnerability hypothesis, first proposed by Bashshur and Metzner (1970), was tested in Part A of the present study. In Part B, an expanded model was used including explanatory variables identified by research building on Bashshur & Metzner's (1970) work.

Literature Review

The premise underlying the medical marketplace is that consumers make rational choices among alternatives (Mechanic 1989). Enrollees are assumed to select insurance plans according to the best interest of themselves and their families, ranking the available options (perhaps implicitly) according to their own financial circumstances, expected need for medical care, uncertainty regarding medical expenditures, aversion to risk of financial loss, and their beliefs about medical practice (Schuttinga, Falik, and Steinwald 1986; Berki and Ashcraft 1980).

When the choice includes health maintenance organizations (HMOs), the financial characteristics change. Traditionally, HMO premiums are higher, coverage is more extensive, and copayments for services are nominal. In addition, features of the delivery system are affected. HMO members are required to used plan physicians and facilities, and access to special care is controlled through a referral process. The family's attitude toward preferences for different delivery system characteristics now enter into the decision process. In recent years, with the entry of preferred provider organizations (PPOs) into the health care market, studies of consumer choice have included the PPO as an option as well.

Studies of enrollment choice attempt to determine individual and family characteristics that differentiate those who select one plan (an HMO for example) from those who don't. Two excellent reviews of the literature on the correlates of the health insurance enrollment decision have been done by Acito (1978) and Berki and Ashcraft (1980). An area of research that has evolved from initial studies of the enrollment choice is that of patient self-selection (i.e., selection bias). Wilensky and Rossiter

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(1986) and Mechanic (1989) provide a good overview of the work done in this area.

The risk-vulnerability hypothesis consolidates economic & medical considerations to posit that those who feel themselves to be more vulnerable, either economically or medically, are the ones most likely to enroll in an HMO (Berki et al. 1978), rather than the traditional fee-for-service plan. In Bashshur & Metzner's (1970) hypothesis, economic risk entailes having assets or income at risk to medical bills. Following this logic, households with higher asset or incomes would be more likely to select a comprehensive HMO plan.

The evidence on the tenability of the risk- vulnerability hypothesis has been mixed (Berki et al. 1978). Some studies confirm that enrollees in HMO-type plans tend to be married, older, sicker, and higher users of health services (Metzner and Bashshur 1967; Moustafa, Hopkins, and Klein 1971). Other studies, however, find no support, equivocal support, or tend to contradict the hypothesis (Bice 1975; Tessler and Mechanic 1975; Berki et al. 1978; Juba, Lave, and Shaddy 1980; Merrill, Jackson, and Reuter 1986).

Most of this research has investigated determinants of choice in terms of demographic characteristics and/or scope of services and cost (i.e., features) of the plans but it was not until 1978 that any studies concerning the choice of health insurance using multivariate analysis appeared (Strevel 1980; Welch and Frank 1986).

Methodology

In April 1989, a random sample of two thousand employees of a large midwestern university were surveyed about their November, 1988 enrollment decision among four comprehensive health insurance plans: a self-insured fee-for-service plan, a PPO, and two HMOs. Eight hundred and fifty of the 1,348 returned surveys had complete information for eligible respondents who enrolled in one of the health insurance plans resulting in a useable response rate of 42.55%. The sample was representative of the entire employee population based on job status.

In Part A, One-Way Anovas were performed to determine if enrollees of HMOs were significantly different from the fee-for-service or PPO enrollees along the vulnerability characteristics proposed by Bashshur & Metzner (1970). Logistic regression was used in Part B to accommodate dichotomous dependent variables and both continuous and categorical explanatory variables. The dependent variable for Part B was the probability of joining either an HMO, a fee-for-service plan, or a PPO. To interpret more easily the statistical results, measures of proportional effect were computed from the logistic coefficients (Peterson 1985).

Results

Part A - Univariate Analysis

Part A of the present research study is the univariate analysis of the risk-vulnerability hypothesis (Table 1). All means were significantly different between HMO enrollees and fee-for-service enrollees. Of the four items making up the health status measure (perceived health status of the respondent, perceived family health status, evidence of chronicity in family member, and evidence of chronicity in respondent) HMO enrollees were significantly healthier than the fee-for-service group on all four measures. The fee-for-service enrollees had a significantly higher family income than the HMO group. Finally, HMO enrollees were at a significantly higher mean family life stage risk than the fee-for-service group. Family life stage composition was assessed using a family life stage risk variable constructed by criteria set forth by Berki and Ashcraft (1978). Berki and Ashcraft proposed that family life stage risk increased from 1 (lowest risk) to 10 (highest risk). For example, The enrollee in the risk category of 1 was married, had no children, and was less than 40 years of age.

Only two of the mean comparisons were significant when comparing the risk-vulnerability hypothesis measures between HMO enrollees and PPO enrollees: evidence of chronic condition in the respondent and family income levels. The HMO enrollees had a significantly higher respondent chronic condition mean than the PPO group (e.g., the HMO group was healthier by this measure.). And the PPO group was found to have a significantly higher family income than the HMO enrollee group. Because only two of the measures of the risk-vulnerability hypothesis were found to be significantly different and both favored the HMO plan, the risk-vulnerability hypothesis can be rejected when comparing the HMO enrollee group and the PPO enrollee group.

Part B - Logit Analysis

Table 2 shows the beta coefficients and the significance of the independent variables on the explanation of choice in the health insurance decision when the dependent variable was the probability of joining either an HMO, a fee-for-service plan, or a PPO. Perceived family health status, prior utilization, family income levels, education, physical access, and spatial access were important predictors in the selection decision when the enrollee chose the health maintenance organization. Perceived family health status, prior utilization, existence of relationship with a physician, physical access, and spatial access were the significant independent variables when the fee-for-service plan was the dependent variable. Only two variables, physical and spatial access, were significant for the PPO enrollee group. Five of the individual variables used in the multivariate analysis of the risk-vulnerability hypothesis were not found to be significant predictors for any of the health insurance plans: perceived health status of the respondent, chronicity, family chronicity, family life stage, and integration into the medical care system.

The predicted change in the probability of belonging to a category of the dependent variables (e.g., health insurance plan) resulting from a change in an explanatory variable (e.g., a unit change) for Part B can be found in Table 3. A change in the probability of enrolling in a plan depends on the initial probability of enrolling in that plan. It is a non-linear relationship (Hibbard and Weeks, 1987). To calculate the proportional effect:

$$\text{change } P_i \approx \beta_X \, [P_i(1-P_i)]$$

where: P_i = probability of initial enrollment
β_X = beta coefficient of significant independent variable.

The effect of a one unit increase of each of the significant independent variables on the probability of choosing a health maintenance organization are as follows. The results suggest that as the respondent's perception of family health status increased, the probability of joining the HMO decreased by 3.96%. For each unit increase in prior utilization (1 unit=$249), the probability of joining the HMO increased by 2.76%. With a one unit increase in family income level (1 unit=$9,999), the probability of joining the HMO increased by 5.09%. As education level (1 unit=1 year) increased, the probability of joining the HMO increased by 2.91%. Physical access was measured as the importance of the respondent's physician being close to his/her work or residence. Table 3 illustrates that with each one unit increase of importance in physical access, the probability of enrolling in the HMO decreased by 13.52%. Spatial access was measured as the importance of access to specialists and doctors of choice. As the importance on this dimension increased, the probability of enrolling in the HMO increased by 15.31%.

The results indicate that a one unit increase in perceived family health status increases the probability of joining the fee-for-service plan by 3.24%. An increase in one unit of out-of-pocket costs on medical care in 1988 decreased the probability of joining the fee-for-service plan by 2.22%. The independent variable measuring existence of relationship with physician measured the importance of the existence and maintenance of a relationship with a family physician. A one unit increase in the importance of this variable increased the probability of joining the fee-for-service plan by 3.57%. A one unit increase in the importance of the physical access variable increased the probability of joining the fee-for-service plan by 3.51%, while the importance of spatial access decreased the probability by 7.12%.

Of the two significant variables affecting the probability of joining the preferred provider organization, each had the opposite effect on the probability. The importance of physical access increased the probability of joining the preferred provider organization by 5.02%. The importance of spatial access decreased the probability by 5.51%.

Summary and Discussion

Part A

When comparing HMO and fee-for-service enrollees using univariate analysis, the risk-vulnerability hypothesis was rejected (see Table 1). For all four measures of health status, the HMO enrollee group was healthier, interpreted as, on average, medically less vulnerable than the fee-for-service group. And, the fee-for-service group had a significantly higher average household income than the HMO enrollee group, making them more economically vulnerable according to the logic set forth by Bashshur and Metzner (1970). Both of these findings are inconsistent with Bashshur and Metzner's hypothesis.

Table 1

Part A. Test of Risk-Vulnerability Hypothesis - Univariate Analysis - Comparison of Means[a]

Indicator	Condition[b]	
	HMO vs. Fee-for-Service	HMO vs. PPO
PERCEIVED HEALTH STATUS:		
How would you classify your health status? 1=poor 2=below average 3=average 4=good 5=very good	4.26 vs. 4.03*	4.26 vs. 4.26
How would you classify the rest of your family's health status (as a whole)? 1=poor 2=below average 3=average 4=good 5=very good	4.15 vs. 3.96*	4.15 vs. 4.18
EVIDENCE OF CHRONIC CONDITIONS:		
Does a member of your family, besides yourself, have a chronic health condition? 1=yes 2=no	1.79 vs. 1.66*	1.79 vs. 1.73
Do you have a chronic health condition? 1=yes 2=no	1.88 vs. 1.74*	1.88 vs. 1.81*

[a] One-Way Anova - Scheffe's test was used due to unequal cell sizes.

[b] HMO mean is first mean given.

*Means significantly different at p = .05.

Table 1 continued.

Indicator	Condition[b]	
	HMO vs. Fee-for-Service	HMO vs. PPO
FAMILY INCOME LEVELS: 1=less than $10,000 2=$10,001-$14,999 3=$15,000-$19,999 4=$20,000-$29,999 5=$30,000-$39,999 6=$40,000-$74,999 7=greater than $75,000	4.37 vs. 5.31*	4.37 vs. 5.07*
FAMILY LIFE STAGE: 1=lowest risk 10=highest risk	5.14 vs. 4.40*	5.14 vs. 4.93

[a] One-Way Anova - Scheffe's test was used due to unequal cell sizes.

[b] HMO mean is first mean given.

*Means significantly different at p = .05.

When looking at family life stage risk, the HMO enrollee group was at a significantly higher mean risk stage than the fee-for-service group, making the HMO enrollee group more vulnerable along these lines. This relationship is consistent with Bashshur and Metzner's (1970) risk-vulnerability hypothesis.

Table 1 illustrates that only two of the mean comparisons were significant when comparing the risk-vulnerability hypothesis measures between the HMO enrollee group and the PPO enrollee group: evidence of chronic condition in the respondent and family income levels. On the medical measure, the HMO enrollee group was, on average, healthier. When looking at family income, the PPO enrollee group was found to have a significantly higher family income than the HMO enrollee group, making them more economically vulnerable according to Bashshur and Metzner (1970). Because only two of the measures of the risk-vulnerability hypothesis were found to be significantly different and that in both of them the HMO enrollee group was assessed to be less vulnerable, the risk vulnerability hypothesis was rejected when comparing the HMO enrollee group and the PPO enrollee group.

According to Hellinger (1987), if healthier people join an HMO, then the HMO enjoys favorable selection. If ailing people join the HMO, then the HMO experiences adverse selection. Based on the univariate analysis of the means in testing the risk-vulnerability hypothesis, the HMOs in this study were experiencing favorable selection on all four measures of health status when compared with fee-for-service enrollees. Only on family life stage did the HMO enrollees appear to be riskier. When comparing the HMO enrollee group with the PPO enrollee group, only one of the health measures was significant and it favored the HMO.

Part B

The logit analysis in Part B (see Table 2 and 3) found that six of the twelve independent variables were significant in explaining the enrollment decision when HMO enrollment was the dependent variable. One of the four measures of health status, perceived family health status, was significant as were prior utilization of health care services, family income level, education, and both measures of access - physical and spatial. Of the four variables measuring health status, three of the beta coefficient signs were in the anticipated direction while the sign on chronicity was incorrect. The family life stage risk variable was not significant, which was surprising. Future research might explore the testing of those variables which made up this family life stage risk measure (age of respondent, marital status, presence of children, and age of youngest child) to see the separate effect(s). The influence of the items

Table 2
Part B. Beta coefficients and standard errors of independent variables in the logit equation with selection of an HMO, a fee-for-service plan, or a PPO as the dependent variable. Effective n=603.

Variable	HMO	Fee-for-Service	PPO
Perceived Health Status	-.1607 (.1697)	.2391 (.1607)	.0068 (.1364)
Perceived Family Health Status	-.1586** (.0825)	.2052** (.0805)	-.0610 (.0669)
Chronicity	.1429 (.1935)	-.1060 (.1642)	.0838 (.1492)
Family Chronicity	-.1019 (.1542)	.1324 (.1403)	-.0479 (.1210)
Family Income Levels	.2038** (.0981)	-.1730 (.1095)	-.0087 (.0835)
Family Life Stage	-.0114 (.0478)	.0603 (.0514)	-.0050 (.0394)
Prior Utilization	.1105** (.0556)	-.1331** (.0587)	.0174 (.0470)
Education	.1163** (.0635)	-.0434 (.0664)	-.0437 (.0529)
Existence of Relationship with Physician	-.0922 (.1063)	.2136** (.1025)	-.1133 (.0854)
Integration into Medical Care System	.0191 (.0679)	-.1009 (.0725)	.0724 (.0570)
Physical Access (importance)	-.5409*** (.0974)	.2101** (.0998)	.2411*** (.0784)
Spatial Access (importance)	.6124*** (.0543)	-.4265*** (.0577)	-.2642*** (.0387)

*** Significant at $p \leq .01$
** Significant at $p \leq .05$
* Significant at $p \leq .10$

making up the family life stage risk measure were subtly included by other variables in the present study (e.g., family income, existence of relationship with physician, and integration into the medical care system). Both measures of relation to provider were not significant, which was expected.

When looking at fee-for-service as the dependent variable, only one of the four health status measures was significant: perceived family health status. This same measure was significant in the HMO enrollee group decision. Prior utilization of health care services was significant in this equation, as it was when the dependent variable was an HMO plan. One measure of the relation to provider variable, existence of relationship with physician, was significant while Juba, Lave, and Shaddy's (1980) integration into the medical care delivery system was not. The relation to provider variable asked specifically whether the respondent deemed it important to stay with his/her family doctor while the integration in the medical care delivery system variable was constructed using the number of years living within a 45 mile radius of the main campus area as the measure. The importance of being able to stay with the family physician and/or see specialists of choice has been found to be an important predictor of choice in previous studies. Both measures of access were found to be significant in the decision by the fee-for-service enrollee group, with physical access but not spatial access behaving in the expected direction. These independent variables were also found to be significant by the HMO enrollee group. Sociodemographic variables, family income, family life stage, and education, were not found to be significant when the dependent variable was the fee-for-service plan.

Table 3
Part B. Proportional effect of independent on the probability of selecting an HMO, a fee-for-service, or a PPO health insurance plan.

Variable	HMO	Fee-for-Service	PPO
Perceived Health Status	---	---	---
Perceived Family Health Status	-.0396	.0324	---
Chronicity	---	---	---
Family Chronicity	---	---	---
Family Income Levels	.0509	---	---
Family Life Stage	---	---	---
Prior Utilization	.0276	-.0222	---
Education	.0291	---	---
Existence of Relationship with Physician	---	.0357	---
Integration into Medical Care System	---	---	---
Physical Access (importance)	-.1352	.0351	.0502
Spatial Access (importance)	.1531	-.0712	-.0551

Only two of the twelve independent variables were found to be significant in predicting PPO enrollment: physical and spatial access. There has been little research conducted which includes the PPO plan as an option when employees have had a choice among comprehensive health insurance options. These results indicate that measures used in the risk-vulnerability hypothesis are not appropriate when looking at what explains the PPO enrollee decision.

Implications

The conflicting results of the univariate analysis versus multivariate analysis found in this study confirmed the mixed results of previous research in this area. Univariate analysis examines significant differences without holding constant other variables being considered. An educator writing consumer literature for HMO members, for example, might want to rely upon the mean or median education level of that group. Policymakers, marketers, and educators who may be anticipating change or promoting change, may want to rely on unit effects resulting from more sophisticated multivariate analysis that controls for other factors being considered.

The expanded model, which included measures of prior utilization, education, relation to provider, and access to care as well as the risk-vulnerability measures proposed by Bashshur and Metzner (1970) provided a good explanation of choice for HMO enrollees. Because most of the work done in this area has focused on the HMO enrollee, this fact is not surprising. Only two of the independent variables in the expanded model were significant when PPO was the dependent variable, leading one to assess that these variables were not adequate in explaining the PPO enrollee decision. This fact demonstrates the differences of the preferred provider organization as compared to the two other market entries studied here.

In the rapidly changing health care marketplace of the 1980's, the growth of PPOs has been unparalleled (Gabel et al. 1987). Enrollment grew from only 1.3 million Americans in health plans eligible to use PPO services in December, 1984 to 16.5 million in July, 1986 (Gabel and Ermann 1985; de Lissovoy et al. 1987). A better explanation of the PPO enrollee needs to be formulated.

References

Acito, F. (1978), "Consumer Decision Making and Health Maintenance Organizations: A Review," Medical Care, 16: 1-13.

Bashshur, R. L. & Metzner, C. A. (1970), "Vulnerability to Risk and Awareness of Dual Choice of Health Insurance Plans," Health Services Research, 5: 262-269.

Berki, S.E., Penchansky, R., Fortus, R. S., & Ashcraft, M. (1978), "Enrollment Choices in Different Types of HMOs - A Multivariate Analysis," Medical Care, 16: 682-697.

Berki, S.E. & Ashcraft, M. L. F. (1980), "HMO Enrollment: Who Joins What and Why: A Review of the Literature," Milbank Memorial Fund Quarterly/Health and Society, 58: 588-632.

Bice, T. W. (1975), "Risk Vulnerability and Enrollment in a Prepaid Group Practice,". Medical Care, 13: 698-703.

Enthoven, A. C. (1980) Health Plan: The Only Practical Solution to the Soaring Cost of Medical Care, Reading, MA: Addison Wesley.

Gabel, J., & Ermann, D. (1985), "Preferred Provider Organizations: Performance, Problems, & Promise,". Health Affairs, 4: 24-40.

Garland, S. B., Hoerr, J., Galen, M., Hawkins, C., DeGeorge, G., Mallory, M., & Levine, J. B. (1989, November 20), "What You Need to Know About Enhanced Benefits," Business Week, pp. 118-122.

Grazier, K. L., Richardson, W. C., Martin, D. P., & Diehr, P. (1986), "Factors Affecting Choice of Health Care Plans," Health-Services Research, 20: 659-682.

Hellinger, F. J. (1987), "Selection Bias in HMOs: Analysis of Recent Evidence," Health Care Financing Review, 9 (No. 2): 55-63.

Hibbard, J. H. & Weeks, E. C. (1987), "Consumerism in Health Care - Prevalance and Predictors," Medical Care, 25 (No. 11): 1019-1032.

Juba, D. A., Lave J. R., & Shaddy, J. (1980), "An Analysis of the Choice of Health Benefit Plans,: Inquiry, 17: 62-71.

McClure, W. (1980), "Implementing a Competitive Medical Care System Through Public Policy," Journal of Health Politics, Policy, and Law, 7: 2-44.

Mechanic, D. (1989), "Consumer Choice Among Health Insurance Options," Health Affairs, 8 (No. 1): 138-148.

Metzner, C. A. & Bashshur, R. L. (1967) Factors Associated with Choice of Health Care Plans. Journal of Health and Social Behaviour, 4, 291-299.

Merrill, J., Jackson, C., & Reuter, J. (1985), "Factors That Affect the HMO Enrollment Decision: A Tale of Two Cities," Inquiry, 22: 388-395.

Metzner, C. A. & Bashshur, R. L. (1967) Factors Associated with Choice of Health Care Plans. Journal of Health and Social Behavior, 4, 291-299.

Moustafa, A. T., Hopkins, C. E., & Klein, B. (1971), "Determinants of Choice and Change of Health Insurance Plan," Medical Care, 9 (No. 1): 32-41.

Peterson, T. (1985), "A Comment on Presenting Results from Logit and Probit Models," American Sociological Review, 50: 130-135.

Schuttinga, J. A., Falik, M., & Steinwald, B. (1985), "Health Plan Selection in the Federal Employees Health Benefits Program,". Journal of Health Politics, Policy, and Law, 10 (No. 1): 119-139.

Scitovsky, A. A., McCall, N., & Benham, L. (1978), "Factors Affecting the Choice Between Two Prepaid Plans," Medical Care, 16: 660-681.

Strevel, D. W. (1980) Dual Choice Dental Plan: Process of Consumer Choice, Ann Arbor, MI: University Microfilms International.

Tessler, R. & Mechanic, D. (1975) "Factors Affecting the Choice Between Prepaid Group Practice and Alternative Insurance Programs," The Milbank Memorial Fund Quarterly/Health and Society, 53: 149-172.

Varner, T. & Christy, J. (1986) Consumer Information Needs in a Competitive Health Care Environment," Health Care Financing Review, (Annual Supplement): 99-104.

Welch W. P. & Frank, R. G. (1986) "The Predictors of HMO Enrollee Populations Results from a National Sample," Inquiry, 23: 16-22

Wilensky, G. R. & Rossiter, L. F. (1986) "Patient Self-Selection in HMOs," Health Affairs, 5 (No. 1): 66-80.

UTILIZATION OF PHYSICIAN SERVICES BY CHILDREN OF SINGLE AND MARRIED EMPLOYED MOTHERS

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This paper examines the determinants of children's utilization of physician services. The data used are the Health Interview Survey 1981 and its Children's Health Supplement. Household production theory is the theoretical basis of the model. Children from one and two parent families are examined separately. The results show that use of Medicaid benefits, mother's education, and presence of chronic conditions are positively associated with the use physician services. The number of siblings, mother's employment, and maternal age have a negative effect on the use of physician services. Moreover, these effects were not consistent among children of two parent and mother-headed households.

INTRODUCTION

Concern has been raised about the health of children due to increases in the number of women in the labor force, single parent and dual earner families. These changes in family structure have affected the availability of time within families. When families face high demands on their time, they change the way they allocate their time among household activities, including time with their children. Family may substitute medical services for parent's time to maintain the health levels of their children.

A few researchers have examined the effects of maternal employment and marital status on the use of medical services by children. However, existing studies have examined the children of both married and non-married mothers as a homogeneous group (Alexander and Markowitz, 1986; Cafferata and Kasper, 1985; Colle and Grossman, 1978; Inman, 1976; Wolfe, 1980). The current study will examine and contrast the effects of maternal employment status along with other factors on the use of medical services by children of one and two-parent families.

PREVIOUS STUDIES

Maternal Employment Status

Colle and Grossman (1978) investigated the determinants of utilization of pediatric care by employing household production theory. They used national data collected by the Center for Health Administration Studies and National Opinion Research Center of the University of Chicago. Demand functions for only preventive care and for both preventive and curative care were estimated for 839 sample children aged one to five. Employment status had no effect on physician visits. Even an interaction term, the time cost for the physician visit (wage rate) and employment status, was found insignificant.

Wolfe (1980) examined the effect of government health programs such as Medicaid and Neighborhood Health Centers on the use of pediatric care by using the 1975 Rochester Community Child Health Survey. In this study, 814 children age one to eleven were examined. The factors family income, race, health insurance, marital and employment status of the mother, age and sex of the child, parent's use of physician services, routine check-ups, number of hospitalization per year, number of days ill per year, and maternal age were examined. Using a logistic regression procedure, Wolfe (1980) observed no significant differences in the probability of physician visits among the children of working and non-working mothers.

Applying traditional demand theory, Inman (1976) estimated demand models for preventive and curative care with a sample that was stratified by the mother's employment status. Data from the National Academy of Science, 1971 Survey of Washington D.C. families were used. The sample was composed of 1694 children aged six months to 12 years.

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The children were from predominantly black families.

Using an ordinary least squares regression, Inman (1976) found family income, mother's education, and having three or more colds a year have a positive and significant influence on the use of physician services by children of working and non-working mothers. The fee for the physician visit affects the use of physician services for both preventive and curative care negatively, but only for the children of working mothers. Age of children is found to have a negative and significant effect on the use of preventive care for children of both working and non-working mothers. Working and married mothers are found to use more preventive care for their children than other mothers.

Alexander and Markowitz (1986) studied the relative importance of maternal employment as a determinant of pediatric care utilization. The sample was drawn from a medical record of all preschool children in a urban hospital. The data were collected from medical records and a telephone survey of mothers. In their study, 167 preschool children from low-income and working class families were investigated. Maternal employment was measured as a dummy variable, equal one if mother was employed. Using an ordinary least squares regression technique, children of working mothers were found to make fewer physician visits than those of non-working mothers.

The effect of maternal employment on the use of ambulatory physician services was studied by Cafferata and Kasper (1985). They used the data from the National Medical Care Expenditure Survey 1977. Sample children aged one to eleven were examined. Using logistic regression analysis, it is found that the children of full-time, employed mothers are less likely to have ambulatory physician visits than other children.

The current literature does not suggest clear effects of the mother's employment status on the demand for medical services. Colle and Grossman (1978) found an insignificant effect of mother's working status on the use of preventive and curative care. Mother's employment status also does not affect the probability of physician visits in Wolfe's study (1980). Using a stratified sample by maternal working status, Inman (1976) found inconsistent effects of time cost on the use of preventive and curative care for the children of working and non-working mothers. On the other hand, a negative effect of maternal employment status on the use of physician services is found in Alexander and Markowitz (1986) and Cafferata and Kasper's study (1985).

Interpreting the results of these studies is difficult since the children of married and non-married mothers were not examined separately. The existing literature did not recognize that married and non-married mothers are dissimilar in their productivity in household production activities. The marginal effects of the explanatory variables are not the same for the children of married and non-married mothers. Home and child care production are affected by whether or not a second adult is present to contribute to the production process. The following model explains the unique differences in the child care decision when one- and two-parent households are compared.

THEORETICAL FRAMEWORK

Demand Model for Medical Services

Using Becker's (1965) framework for modeling household behavior, we will examine a mother's choices in the care of her children. Each mother's utility is hypothesized to be derived from the quality of her children, market purchased goods, and her leisure activities. The mother's preferences also affect her utility as expressed below:

$$U = u\,(\text{Quality of child},\ Q_O,\ L\ ;\ Z_1) \qquad (1)$$

where Quality of child = f (C)
C = Child's health status
Q_O = Quantity of all market goods
L = Time spent for leisure activities by mother
Z_1 = Preference shifters (i.e., sex of child, number of children, and the age of child)

The child's health status (C) is a household produced commodity and can be written in the following form:

$$C = c\,(X_c,\ H_{cw}\ ;\ H_{ch},\ Z_2) \qquad (2)$$

where X_c = Medical services for producing of C
H_{cw} = Time spent for production of C by the wife
H_{ch} = Time spent for production of C by the husband
Z_2 = Productivity shifters (i.e., mother's education, age, breast-feeding, and the child's birth weight)

Time is an input in child health production, along with medical services. Mother's time and medical services are substitutes in production of child's health; time can be substituted for medical services or vice versa to produce a constant level of health. We assume some positive amount of both inputs are used in child care. Moreover, we assume that the productivity of each input increases at a decreasing rate. In other words, each input in health production leads to better health status. Yet, as more each input is used, its ability to generate significant improvement in the child's health declines.

Substituting Eq. (2) into Eq. (1), the mother's utility function can be rewritten as follows:

$$U = [\, c\,(X_c, H_{cw} ; H_{ch}, Z_2), Q_o, L ; Z_1 \,] \qquad (3)$$

The mother's goal is to maximize her utility by making rational decisions on the allocation of her time and income. Her income and time constraints are:

$$I = P_{xc}X_c + P_oQ_o \qquad (4)$$
$$T = M + H_{cw} + L \qquad (5)$$

where I = family income
P_{xc} = The price of medical services
P_o = The price of all other market goods
T = Total available time
M = Total hours for market work by mother

Further, the income constraint requires that actual income equals actual expenditure. More specifically,

$$P_{xc}X_c + P_oQ_o = WM + H + U \qquad (6)$$

where W = Mother's market wage rate
H = Husband's earning
U = Unearned income

By combining the above income and time constraints, the utility maximization problem for married and non-married mothers can be solved by applying the Lagrangian method.[1] The mother's demand functions for time and purchased inputs for children's health production as derived from the first order conditions are as follows:

$$X_c^d = x_c^d\,(W, P_{xc}, P_o, V ; Z_1, Z_2) \qquad (7)$$
$$H_c^d = h_c^d\,(W, P_{xc}, P_o, V ; Z_1, Z_2) \qquad (8)$$

These demand functions provide the structure for understanding a mother's decisions. The exact relationship between the independent variables and the dependent variables differs between married and non-married mothers. For married mothers, the responsibility in household work, including child care will be shared with their spouses. Thus, the presence of a husband results in enhanced household productivity for married mothers as compared to non-married mothers. The optimal time allocation decisions of married and non-married mothers differ. Therefore, equations (7) and (8) are estimated separately, according to marital status.

Empirical Model

Based on the theoretical model, the empirical estimation focuses on equation (7) and is specifically specified as follows:

$$\begin{aligned} NUMVISIT = {} & a_0 + a_1{*}INCOME + a_2{*}WORK + a_3{*}CPIM + a_4{*}CPIALL \\ & + a_5{*}MEDICAID + a_6{*}CAGE + a_7{*}GENDER + a_8{*}SIBLINGS \\ & + a_9{**}RESMOBIL + a_{10}{*}CHRONIC + a_{11}{*}MOMEDU \\ & + a_{12}{*}MHEALTH + a_{13}{*}MAGE + a_{14}{*}MOMAGE + a_{15}{*}BFEED \\ & + a_{16}{*}BWEIGHT + e \end{aligned}$$

where Dependent Variable:
NUMVISIT = number of physician visits
Independent Variable:
V: INCOME = family income
W: WORK = employment status of mother
P_{xc}, P_o:
CPIM = Consumer Price Index for medical care provided in the region
CPIALL = Consumer Price Index for all items sold within the region
MEDICAID = the use of Medicaid benefits
Z_1:
CAGE = age of sample child
GENDER = gender of sample child
SIBLINGS = number of siblings
RESMOBIL = residential mobility
CHRONIC = presence of chronic condition
MOMEDU = level of mother's education
Z_2:
MHEALTH = current health status of mother
MAGE = mother's current age
MOMAGE = mother's age when child was born
BFEED = breast-feeding
BWEIGHT = birth weight of sample child

Model Hypothesis

An increase in income (V) raises the purchasing power for all market goods, including medical services. It is expected that the effect of increased income on the demand for medical services is positive if medical services are a normal good and negative if medical services are an inferior good.

The mother's employment status (W) reflects her available time for health production. Household production theory indicates that a working mother spends less time in health production and uses more market goods for health production, holding other factors constant. The variables, Consumer Price Index for medical care and all other goods in

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[1] See Hong (1990) for the derivation of the demand model.

1980, are included to examine the effect of price changes (P_{XC}, P_O) on the use of medical services. It is expected to be negative because real income will decrease as the prices of medical services and all other goods rise.

Medicaid benefits reduce the out-of-pocket cost of medical services to zero or near zero, depending on the level of benefits (Feldstein 1983; Newacheck 1986). A positive relationship between the use of medical services and the use of Medicaid benefits is hypothesized..

Several measures of taste for medical care (Z_1) are included: age and sex of the sample child, number of siblings, residential mobility, presence of chronic conditions and level of mother's education. A negative and significant effect of a child's increasing age on the use of physician services is reported in several studies (Edwards and Grossman 1981; Inman 1976; Kovar 1982; Orr et al. 1984; Wolfe 1980). Previous studies have also reported that male children use more medical services than female children (Colle and Grossman 1978; Edwards and Grossman 1981; Inman 1976; Kovar 1982; Wolfe 1980). As the number of children in the family increases, the average cost of health care per child decreases because the parents' limited time and income are spread among more children. As a result, the demand for medical services for each child will decline. The predicted effect of mobility is unclear. As the family moves more frequently, the use of medical services for children may increase to maintain a continuity of health care.

Both the presence of chronic health conditions and the mother's education are hypothesized to be positively associated with the number of physician visits. A child with a chronic health condition requires more health care services to produce a desired level of health status. The level of the mother's education tends to be associated with her level of awareness of symptoms and knowledge about health care (Davidson 1980). She may also use more preventive care than a less educated mother.

Finally, five indicators of productivity shifters (Z_2) are included in the empirical model. These are the current health status of the mother, mother's current age, maternal age, breast-feeding, and the birth weight of the sample child. A good health status of mothers influences the care of infants and growing children positively (Feldman et al. 1987; Kessel et al. 1981).

The older mother has more experience in household production activities. This results in higher productivity and more time allocated to household work than the younger mother. With more time spent in health production, the older mother will use less medical services for her child since time and medical services are substitutes for each other.

Maternal age, breast-feeding, and birth weight of the child are indicators of child health during infancy. Young maternal age and low birth weight are associated with poor health status for children. With lower initial health status, the productivity of mother is lower and results in greater use of medical services. Breast-feeding is recognized as a positive factor that affects the early childhood's development and does the health status of children (Goldberg 1984; Wary 1978). Therefore, fewer physician visits will be made by breastfed children. The measurement and description of variables are presented in Table 1.

METHODS

Sample

The data for the current study are the 1981 National Health Interview Survey. This is a national survey conducted in 1980 by the U.S. Bureau of the Census for the National Center for Health Statistics. The National Health Interview Survey is based on a sample of the entire civilian non-institutional population of the United States. The 1981 survey includes supplemental information on children's health. This Child Health Supplement provides a unique opportunity to study factors affecting children's health. Other data sources frequently include information on children and their families but not about their mothers. The Child Health Supplement likewise is the only existing source of data on family characteristics and children's utilization of medical services, health status, school achievement, and birth condition.

Since the primary objective of this study is to examine the effects of maternal employment on the use of medical services, children who live only with their fathers, brothers, or other male relatives are excluded

TABLE 1. Measurement of Variables

Variable	Measurement
X_c:	
Number of Physician Visits	Continuous variable
V:	
Family Income	Under $1000 to $25000+
P_{xc}:	
CPI for Medical Care	Index[1]
Medicaid	Dummy variable (=1 if used)
P_o:	
CPI for All Goods	Index[1]
W:	
Mother's Employment Status	Dummy variable (=1 if work)
Z_1:	
Age of the Sample Child	Number from 6 to 15
Sex of the Sample Child	Dummy variable (=1 if male)
Number of Siblings	Continuous variable
Residential Mobility	Continuous variable
Presence of Chronic Condition	Dummy variable (=1 if sample child has a chronic condition)
Mother's Education	Zero years to 17+ years completed
Z_2:	
Mother's Current Health	Dummy variable (=1 if good)
Mother's Current Age	Continuous variable
Maternal Age	Continuous variable
Breast-feeding	Dummy variable (=1 if sample child was breastfed)
Birth Weight	Continuous variable

[1] Indexes are assigned for each sample child based on the region where he/she lives; northeast, northwest, west, and south.

because the purpose of this study is to examine the behavior of mothers with children. Children whose birth weight is not known are excluded because the current study requires information on the birth weight of the child.

The actual sample used in the current study consists of 5999 children ages 6 to 15 who have a mother or mother figure. Working mothers are slightly over-represented as compared to the distribution of the general population; 55% of women aged 18 and over were in the labor force in 1981 while married mothers are over-represented; about 64% of women aged 18 and over were married in 1981 (Statistical Abstracts of the United States 1988).

Estimation Procedure

The dependent variable for the demand model is the number of physician visits. In the current data, about 27% of children did not visit physicians in 1980. Given this problem of a censored endogenous variable tobit analysis is used. Since the theoretical model predicts that the demand model for married and non-married mothers differs, the data are stratified by marital status and the demand model for children of the two types of families are estimated separately.

RESULTS

Results of the tobit analysis of the demand for physician services are presented in Table 2. A Chow test is performed to test whether significant differences in explanatory power between the stratified sample and the total sample exist (see endnote 1). The test indicates that using the stratified sample is more appropriate than using the total sample as theory suggested.

As hypothesized, access to Medicaid has positive and significant effects on the use of physician services for married and non-married mothers. The magnitudes of the effects are also substantially large as shown in Table 2. Consumers are concerned about the out-of-pocket price not third party payor or governments (Feldstein 1983; Pauly 1982). The Medicaid benefit, reduces the out-of-pocket cost of physician visits to zero or near zero depending on the state where the sample child lives; the greater the coverage for medical care, the lower the out-of-pocket price and the greater the demand for medical care. These results are consistent with Orr and Miller (1981) and Wolfe's (1980) studies. Both report a positive effect of Medicaid benefits on the use of medical services.

The number of siblings has significant and negative effects on the use of physician services. This implies that children with more siblings use fewer physician services than those with fewer or no siblings. This result is suggested by the theoretical model. Due to limited resources in the family, fewer resources will be allocated per child. Fewer physician visits are likely to be made for a child with fewer resources.

TABLE 2. The Results of a Tobit Analysis for the Demand for Medical Services.

Dependent Variable: Number of Physician Visits

Independent Variables	Effects Married	Effects Non-Married
V:		
Family Income	0.077(1.395)	-0.053(-0.606)
W:		
Mother's Employment	-0.697(-3.492)***	-0.353(-0.746)
P_{XC}, P_O:		
CPI for Medical Care	0.473(0.957)	-0.086(-0.089)
CPI for All Goods	-0.674(-0.965)	0.041(0.030)
Medicaid	2.401(3.591)***	2.099(4.368)***
Z_1:		
Age of Child	0.003(0.078)	0.010(0.167)
Sex of Child	-0.252(-1.304)	-0.121(-0.370)
Number of Siblings	-0.686(-7.482)***	-0.608(-3.957)***
Residential Mobility	0.038(0.85[illegible])	0.086(0.983)
Presence of Chronic Condition	0.241(1.161)	0.744(1.840)*
Mother's Education	0.358(5.189)***	0.415(3.762)***
Z_2:		
Mother's Health	0.332(1.091)	-0.630(-1.288)
Mother's Current Age	-0.007(-0.102)	-0.005(-0.433)
Maternal Age	-0.002(-1.789)*	0.009(0.365)
Breast-feeding	0.225(1.000)	-0.436(-1.089)
Birth Weight	0.004(0.410)	0.0004(0.044)
# of iteration	26	27
Log-likelihood	-12279.0	-2693.2
N	4883	1116

Numbers in parentheses represent the t-ratio.
* $P < .1$
** $P < .05$
*** $P < .01$

The level of the mother's education is positively associated with the use of physician services. The findings of this study show that the children of educated mothers visit physicians more frequently than those of less educated mothers, regardless of maternal marital status. Since educated mothers may be more sensitive to the symptoms of disease or illness, have more knowledge about preventive care, and have a higher level of compliance on the required follow-up care (Davidson, 1980; Pauly, 1982), educated mothers may take their children to physicians more frequently.

The effects of the mother's employment status on the demand for physician services is negative for the children of married mothers but is negative and insignificant effect for non-married mothers. The negative effect is consistent with household production theory that suggests the employed mothers may use more medical services since they spend less time in health production than non-working mothers.

The interpretation of these results is not clear. The negative effect of mother's employment suggests that physician visits may be a time-intensive good; therefore, mothers may not substitute physician services for their time. One possible explanation is that working mothers may substitute various health-related activities such as sports programs and healthful diets for medical services. In other words, working mothers may substitute less time-intensive goods (i.e., preventive care) for medical services.

The presence of a chronic condition is found to have a positive and significant effect only for the sample of non-married mothers. Chronically ill children of non-married mothers visit physicians more often than healthy children. These findings are also consistent with the findings of Wolfe's study (1980). In her study, children who have an illness of a vital organ or other major illness are found to make greater use of medical services.

The mother's age at the child's birth has a significant and negative effect on physician visits for children of married mothers. An insignificant effect is found for children of non-married mothers. The findings of this study indicate that children of young mothers are likely to use more physician services than those of older mothers. This is expected because young mothers tend to have less experience in raising children. The inexperienced young mother may take her children to physicians more often due to low productivity in health production, over-sensitivity, or ignorance about the health care of children. Therefore, physician services will be substituted for the young mother's time and knowledge.

DISCUSSIONS

The current study is the first piece that attempts to examine the use of health care for children separately for the children from different households. It clearly confirms that married and non-married mothers make their decisions on the use of medical services differently.

The results of this study have several policy implications. Medicaid benefits allow more medical care for children from low income families. However, there are many children who need care but do not have Medicaid benefits because of eligibility criteria (Boverj, 1982). This program should expand its coverage.

Mother's education seems to be an important factor in explaining the children's health care utilization. Educated mothers demand more medical services for their children. Although the current study does not confirm that educated mothers use more preventive care, the existing literature suggests a higher level of preventive care for children of educated mothers. More education programs are needed to disseminate information about health care, both physical and mental health care.

Children from large families use physician services significantly less than those from small families. Special attention is needed for these children to have adequate medical care. Special programs can be developed to focus on children from large families to enhance their health status.

Whether the children of employed mothers visit physicians less frequently due to inflexible work schedules, a preference for less time intensive health production, or the husband's contribution to child care needs further investigation. Work site family medical care programs could provide a valuable option that enhances child health production among employed mothers.

NOTE

1. This is a chi-square test. The calculated statistic has the following format:
G_2restricted - G_2Full
where G_2 is equal to -2*log-likelihood ratio. This difference has a Pearson chi-squared distribution. The test in this study is: 30022.0 - 29944.4 = 77.6
The critical value for chi-squared (.001, 17) = 40.79.

REFERENCES

Alexander, C. and R. Markowitz (1986), "Maternal Employment and Use of Pediatric Clinic Services," Medical Care, 24:134-137.

Becker, G. (1965), A theory of the allocation of time, Economic Journal, 75:493-517.

Boverj, R. (1982), Medicaid in the Reagan Era, Washington D. C.: Urban Institute Press.

Cafferata G. and J. Kasper (1985), "Family Structure and Children's Use of Ambulatory Physician Services," Medical Care, 23:350-360.

Colle, A. and M. Grossman (1978), "Determinants of Pediatric Care Utilization," The Journal of Human Resources 13: 115-138.

Davidson, S. (1980), Medicaid Decisions: A Systematic Analysis of Cost Problem, Cambridge:Ballinger Co.

Edwards L. and M. Grossman (1981), "Children's Health and Family," Advances in Health Economics and Health Services Research, 2:35-83.

Feldstein, P. (1983), Health Care Economics, New York: John Wiley & Sons.

Goldberg, H. (1984), "Infant Mortality and Breast-Feeding in North Eastern Brazil," Population Studies, 38:105-115.

Hong, Gong-Soog (1990), The Effects of Maternal Employment and Marital Status on Health Care of Children, Unpublished doctoral dissertation, Cornell University.

Inman, R. (1976), "The Family Provision of Children's Health: An Economic Analysis," in The Role of Health Insurance, R. N. Rosett (ed.), New York: National Bureau of Economic Research: 215-254.

Judge, G., W. Griffiths, R. Hill, H. Luckepohl, and T. Lee (1983), The theory and practice of econometrics, New York: John Wiley and Sons.

Newacheck, P. and N. Halfon (1986), "The Financial Burden of Medical Care expenses for Children," Medical Care, 24:1110-1117.

Orr, S. and A. Miller (1981), "Utilization of Health Services by Poor Children since Advent of Medicaid," Medical Care, 19:583-590.

Pauly, M. (1982), "Economic Aspects of Consumer Use," in Issues in Health Economics, Luke and Bauer (eds.), Washington D.C.: Aspen Corp.

U.S. Department of Commerce, Bureau of Census (1988), Statistical Abstracts of the United States.

Wolfe, B., "Children's Utilization of Medical Care,"Medical Care, 18:1196-1207.

Wray, J. (1978), "Nutrition, Breast-Feeding, and Fertility; Maternal Nutrition, Breast-Feeding, and Infant Survival," in Nutrition and Human Reproduction, H. Mosley (ed.), New York: Plenum Press.

Impact of AIDS on Financial Resources: A Pilot Study in Indiana

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The financial impact of Acquired Immunodeficiency Syndrome (AIDS) on households and families has received little attention. Results of a pilot study of AIDS patients in Indiana are presented. Health insurance coverage sources are reported as are changes experienced in income, assets, and debts.

Introduction

Acquired Immunodeficiency Syndrome (AIDS) is a multi-faceted disaster with enormous economic implications for families. Medical research is providing information about AIDS, ways to make it manageable, and appropriate health service delivery. Health economists have provided the limited cost information that exists based on hospital and insurance company data. Little, however, is known about the financial and time costs of the disease to patients, their families, and friends.

In May of 1989, leading AIDS researchers stated that the first wave of the AIDS epidemic in the United States was drawing to a close (Smith 1989). That wave was described as having been centered around the east and west coasts. Speculation was raised as to what the response to the disease would be as it spread through the central part of the country.

As of October 1, 1990, 946 Indiana residents had been diagnosed with AIDS of which 553 had died (ISBH 1990). Whereas the 1990 rate of new cases had been approximately 20 cases per month, 55 cases were identified in September 1990. Only ten counties had not reported a case of AIDS.[3] It appears that Indiana is about three to four years behind the west coast in terms of the spread of the disease (Myers 1989).

The spread of AIDS to the Midwest has raised some new issues. Those who live in rural areas and have AIDS find many challenges to receiving medical care and other services needed to cope with the disease. Two challenges are distance and homophobia, both of which make it difficult to learn about and take advantage of necessary services. Networking through support groups becomes the method of learning about potential services, but some patients and/or their families may find it difficult to take this step. Problems in receiving care or other services invariably impact the costs to the patient or the patient's family.
The exact impact is hard to assess, however, because to date the costs to patients and their household members have not been measured in the United States.

The purpose of this study was to develop an instrument and method of data collection so that the financial ramifications of the AIDS disease to patients and their households can be measured. The instrument was described in a poster session presented to the 1990 ACCI Conference (McRee and Widdows 1990). This paper reports the results of a pilot study conducted in Indiana using the instrument. Only selected results from the baseline survey instrument are being reported.

Review of Previous Efforts

In a study of the first 10,000 AIDS patients in the United States, Hardy (1986) showed that the per patient lifetime hospital costs averaged $147,000. The burden this figure represents, coming on top of the other traumas being faced by the patient and the patient's family or friends, is extreme.

Prior to 1989, the method of determining the cost of AIDS in the United States was to multiply the annual average cost of treatment per patient times the number of patients for that year (Widdows 1989). This formula did not allow for the observation of variation in costs by region, hospital type, stage of the disease, and type of treatment. Furthermore, a review of AIDS studies by Sisk (1987) indicated that many studies excluded costs of services used outside the hospital such as drugs, long-term care, counseling, and community support services.

Updated estimates of the costs of AIDS are being effected by the use of the drug azidothymidine (AZT), patients living longer, changes in populations effected, and regional differences in costs. Hospital costs have been a high percentage of the total costs. As a result of treating HIV related illness before it becomes AIDS, laboratory tests, counseling, and other expenses have become more prevalent in total costs.

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[3] AIDS and HIV positive diagnoses are required to be reported to the state unless the diagnosis is made in an anonymous testing site.

Use of AZT and aerosol pentamadine have increased life expectancy of patients who suffer from pneumocystis carinii pneumonia (PCP) (Scitovsky 1989). For those who can take these drugs, the costs of hospitalization are reduced, including intensive care unit expenses used heavily when attempts are made to prolong life. Using AZT costs about $11.20 per day (Hellinger 1990). Use of aerosol pentamadine costs approximately $2 [illegible]0 per day.

Patients also use other drugs and alternative therapies including alpha interferon, acupuncture, mega-vitamins, and herbal therapies. The cost of these therapies has been estimated at $3.30 per day (Hellinger 1990). These alternative drugs and therapies typically are not covered by any governmental or private insurer.

As with any other disease, someone has to pay the bill. With AIDS, the sources for payment of expenses vary. Medicaid and private health insurance have born the brunt of the expense. Several writers (Scitovsky 1989; Bilheimer 1989) have projected increased pressures on Medicaid as more persons become dependent on the entitlement program to pay their medical expenses.

Most of the AIDS patients have been young and in career stages where concern focuses on the build up of assets more than protection against major catastrophes. Many have simply not accumulated the assets required to meet expenses they experience during the course of the disease. Families and friends become alternative sources for funding to pay bills.

When families and friends become alternative sources for paying the health care bills, financial strains are placed on all involved. In such situations, the cost has fallen partially on health care providers such as hospitals, welfare agencies and insurance companies. These institutions were the first to show concern about the cost of AIDS and in whose name (and under whose funding) initial studies were carried out.

Many patients have no health care coverage at all. According to 1986 data, at least 13.3% of persons in the civilian noninstitutionalized population were not covered by any health care plan (Ries 1987). The group with the highest percent of noncoverage were those between the ages of 18 and 24, males, Afro-Americans, and persons in low income groups. Scitovsky (1989) also indicated that risk groups and diagnoses effect the pattern and the insurance coverage of the disease as well as when the patient is eligible for insurance coverage.

It becomes a game of chance as to whether one receives compensation for expenses or not. As a result, further information needs to be gathered regarding services and financing provided voluntarily by friends, family members, and other programs (such as food stamps, rent/transportation, subsidies, etc.). The extent to which costs are incurred by patients and their families is not known.

The family has long been considered an appropriate unit of analysis for studying matters related to consumption of consumer goods and services. However, little empirical data has explored the use of resources by families when impacted by major health care demands and costs.

Anderson (cited in Litman 1974) indicated that families may determine not only whether a family member receives care but also in how and where this care is provided. Farber (cited in Litman 1974) found that long-term medical problems effected the family's social organization both within the family and within the community.

The Problem

There is a paucity of any data about the costs AIDS patients or their families and friends face as a result of AIDS. It is not an easy problem to address. It requires an intensive study of the financial affairs of all concerned. It is, however, necessary. Without such data, it is difficult for professionals to give meaningful financial advice to the people who have to cope with the effects of the disease.

The client population which stands most to benefit from this project is the patient group themselves, their families and friends. The audience which has the most immediate need for the data is the agencies such as volunteer agencies, welfare agencies and financial planners which advise patients, their friends and families.

Methodology

Internal funding from Purdue University was provided to develop a questionnaire and method of data collection that would provide information regarding the economic impact of AIDS on Indiana households. A two-part questionnaire was developed. Part I was a survey instrument that collected information regarding the health and economic status of the respondent. Part II was a diary survey that chronicalled four consecutive weeks of expenses by the respondent. Information from Part I is being reported in this paper.

Content validity for both forms of the questionnaire was established in three rounds of reviews by persons working directly with AIDS patients. A contract was negotiated with the leading AIDS service organization in the state to pay them a sum of money to distribute the questionnaire received. The organization supplied the services of a graduate assistant who conducted face-to-face interviews with

AIDS patients.[4] Thirty questionnaires were sent to the organization. Twenty-three usable questionnaires were returned in April 1990. In effect, quantity was sacrificed for quality of information received.

The Results

The sample consisted of persons who had made contact with the leading service organization for patients diagnosed HIV positive or with full blown AIDS in the state of Indiana. Respondents were asked to provide information regarding the state of their health, household, and financial situation. The sample can be described as white males between the ages of 23 and 50. Most were urban residents.

In what follows, the descriptive data from Part I of the questionnaire are reported. While the data clearly cannot be claimed to be "representative" of the broader population of Midwestern AIDS sufferers, they are interesting enough to warrant attention.

The length of time since respondents had been diagnosed HIV positive ranged from 3 months to three years. All but five of the respondents had been diagnosed with full blown AIDS. The length of time since respondents had been diagnosed with full blown AIDS ranged from two years and two months to three months.

Eighty-two percent of the respondents were receiving the pharmaceutical treatment of AZT. Fifty-two percent were receiving aerosol pentamadine as a drug therapy.

Table 1 reports the responses of patients when asked to indicate insurance coverages that they were receiving or for which they were eligible for the payment of medical expenses. Sixteen respondents indicated that they were covered by the government sponsored program, MEDICAID. Five persons were covered by insurance related to their current employment. Four persons received health insurance coverage through a former employer as described by the Consumer Omnibus Reconciliation Act of 1985 (COBRA). Four persons had health insurance coverage from multiple sources.

Table 1
Frequency Distribution of Responses by Insurance Coverage Held.

Insurance Coverage	Frequency
Medicaid	16
Current Employer	5
Former Employer	4
Private Health	3
Life Insurance	2

Number with Multiple Coverage = 4

Respondents were asked to indicate their source of income both before diagnosis and at the time of data collection. Table 2 reports the frequencies of response to this variable which was adapted from the NC 182 Family Economic Well-being questionnaire. The most frequently reported sources of income prior to diagnosis were salary, savings, investments, one's own business, and government sources. At the time of data collection, the most frequently reported source of income was government sources. In addition, social security, AFDC, and HUD had become sources of income post-diagnosis.

Table 2
Frequency Distribution of Responses to Income Questions Before Diagnosis and Currently.

Sources of Income	Before	Now
Salary	20	1
Own Business	4	1
Savings	9	1
Investments	9	1
Pension	1	1
Gifts	1	1
Worker's Compensation	1	0
Rental Income	1	1
Project Safe	1	1
Government Sources	4	14
Social Security	0	1
AFDC	0	1
HUD	0	1
Annual Mean Income		
Household Mean Incom	$27,600	$14,150
Own Earnings	14,300	7,149
Government Sources	557	601

Table 2 also reports the response to the questions regarding total before tax household income, total tax personal earnings, and amount of income from governmental sources. Before tax household mean income prior to diagnosis was $27,600. Before tax household mean income at the time of data collection was $14,150. Mean personal earnings were $14,300 prior to diagnosis and $7,149 at the time of data collection. The mean amount of income from governmental sources had increased slightly from $557 prediagnosis to $601 at the time of data collection.

Respondents were asked to indicate the amount of household and business/farm assets owned or being purchased by the household prior to diagnosis and, separately, at the time of data collection. As can be seen in all categories with the exception of checking accounts in Table 3, assets were reduced between the time prior to diagnosis and the point of data collection for this project.

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[4] This proved to be helpful in receiving completed questionnaires as some of the respondents were suffering from dimentia associated with the disease.

Table 3
Frequency Distribution of Responses to Asset Questions Before Diagnosis and Currently.

Assets	Before	Now
Own Home	10	4
Vehicles	17	1
Checking Account	17	17
Savings Account	15	7
CD	5	2
Stocks	5	4
Other	15	8
Business	1	0
Total Mean Household Assets	$8,800	$4,830

The mean total value of assets prior to diagnosis was $8,800. The mean estimated total value of assets in April 1990 was $4,830.

Respondents were asked to indicate types of household debt held prior to diagnosis and at the point of data collection. Table 4 reports the frequencies of responses to these questions. In all categories with the exception of business/farm vehicle debt, change in the source of debt is indicated. Respondents reported more debt that could be categorized as family debt or other debt at the time of data collection than prior to diagnosis for AIDS.

Table 4
Frequency Distribution of Responses to Debt Questions Prediagnosis and Currently.

Debt Sources	Before	Now
Mortgage, Home	9	3
Mortgage, Rental	2	0
Auto Loan	11	5
Credit Card	13	8
Home Improvement	1	0
Education	5	1
Medical	7	1
Family	7	11
Other	3	4
Business	1	0
Business Vehicles	1	1
Livestock	1	0
Total Mean Household Debts	$4,900	$3,400

Table 4 also reports the mean estimated total debt held by households both prior to diagnosis and at the point of data collection. Mean estimated total debt had dropped from $4,900 prior to diagnosis to $3,400 at the time of data collection.

Concluding Comments

This paper presented a small sample administration of a proposed questionnaire designed to analyze the financial impact of AIDS on the patient and his/her immediate family, however defined.[5] The questionnaire was designed to elicit information on the financial environment of the patient before and after being diagnosed HIV positive. Comparison of the two data points allows comment on the financial impact of the disease, even though the data themselves are not necessarily representative of the broader population of AIDS sufferers.

AIDS had impacted the financial status of this sample of Indiana patients profoundly. Almost all of those with "regular" income sources beforehand (salary, own business, etc.) lost their source of income. Average earnings of the patients was halved, and most had to rely on government services for funds. Seventy percent had some kind of insurance. The data revealed that some had either lost coverage or had their rates increased.

There had been a parallel impact on the asset holdings of patients. Both physical and financial holdings had been reduced drastically. So too, however, had debt holdings, but average net asset declined after HIV diagnosis from $3900 per respondent to $1430. The impact on patterns of consumer expenditure will be determined when Part II of the questionnaire is analyzed.

Although the sample is small, the results are interesting and important enough to warrant administration of the questionnaire to a larger population, and grant proposals to this effort are being developed. Large sample results will enable the "rural" dimension of costs to be identified, and relevant policy statements to be made. The financial stress on AIDS patients and their families is significant and the data are needed.

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[5] The term family is defined in the questionnaire by questions asking with whom the patient resided before and after being diagnosed HIV positive.

References

Bilheimer, L. (1989, May) Modeling the Impact of the AIDS/HIV Epidemic on State Medicaid Programs. Paper presented at the meeting, New Perspectives on HIV-Related Illnesses: Progress in Health Services Research. Miami, FL.

Hardy, A.M., Rauch, K., Echenberg, D., Morgan, W.M. & Curran, J. W. (1986) "The economic impact of the first 10,000 cases of acquired immunodeficiency virus in the United States." Journal of the American Medical Association, 255, 209-211.

Hellinger, F.J. (1990) "Updated forecasts of the costs of medical care for persons with AIDS, 1989-1993." Public Health Reports, 105 (No. 1). 1-12.

Indiana State Board of Health. (1990, October 1) Indiana AIDS Surveillance Report. Indiana State Board of Health. Indianapolis, IN.

Litman, T.J. (1974). "The family as a basic unit in health and medical care: A social-behavioral overview." Social Science and Medicine, 8, 495-519.

McRee, M.E.R. & Widdows, R. (1990) The evolution of a survey in a rapidly changing arena: The economic impact of AIDS on households. In M. Carsky, The Proceedings of the 36th Annual Conference of the American Council on Consumer Interests, 137.

Myers, W.A. (1989, Winter) AIDS in Indiana. Health Journal, 2-5.

Ries, P. (1986) "Health care coverage by age, sex, race and family income, United States." NCHS Advance Data, 139, 1-7.

Scitovsky, A.A. (1989, May) Past Lessons and Future Directions: The Economics of Health Services Delivery for HIV-Related Illnesses. Paper presented at the meeting, New Perspectives on HIV-Related Illnesses: Progress in Health Services Research. Miami, FL.

Sisk, J.E. (1987) "The cost of AIDS: A review of the estimates." Health Affairs, 6, 5-21.

Widdows, R. (1988, January). The Economic Cost of AIDS. Paper presented to the Behavioral Sciences AIDS Study Group, Purdue University.

Teaching Writing Skills and Critical Thinking In Consumer Education

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Effective consumer education requires that students learn critical thinking and effective written communications skills. Both these skills can be incorporated into a single project requiring the analysis of a consumer issue.

Setting the Scene

A democracy functions best with informed citizens who base their "votes" on a thorough understanding of issues. Citizens must understand the points of view on and impacts of public policy proposals that address the issues and problems of the day. Those who have this skill will be better able to take leadership roles and persuade others to their point of view.

Rather than have students write a public policy issue analysis as a single task to be turned in as a completed project, they complete a series of assignments which, when taken together and cumulatively, result in a complete issue analysis paper. The result is that they are asked to think critically and receive feedback on their writing at each stage.

Students are to assume that they have taken a summer position as an intern in the Washington, DC office of their local Congressman. An aide to the Congressman (the instructor) has asked them to select a consumer problem for which there has been debate over various proposed solutions. Once students have defined a problem which the aide feels is sufficiently important for analysis, students provide the aide with a straightforward, unbiased written discussion of the strengths and weaknesses of the various solutions as gleened from various sources including newspapers, magazines, professional literature, and government documents. They are then asked to write a position statement for the Congressman regarding the best solution or course of action in response to the problem.

Assignment Components

Each portion of the paper is turned in separately and sequentially for grading and feedback and then returned to the student for editing. The entire, edited paper is turned in at the end of the semester for a final grade. The components are as follows.

1. A problem statement providing a concise write-up of the problem to be addressed. The problem is not that the student's ideal solution has not been implemented. It is a difficulty that consumers are facing in the marketplace and for which public policy solutions have been proposed.

2. Identification of the major proposed solutions to the problem. Doing nothing about the problem should be considered an alternative. Students should describe the proposed solutions and the current state of affairs and history regarding their implementation. If students do not intend to consider some of the solutions identified, they may clearly indicate that at the end of this section. This allows them to delimit their analysis to make it manageable.

3. A thorough, documented and unbiased discussion of the strengths and weaknesses (positives and negatives) of the various solutions to the problem. No preferred solution should emerge or be detectable in this portion of the total assignment. This section of the paper should be written from the perspective of a observer/reporter. The student is forced to keep their own feelings about the solutions in the background as they develop the pro's and con's from existing literature. I want them to keep an open mind and not judge the issue prematurely. This is very difficult for students to do but is a key to effective critical thinking.

4. A persuasive presentation of what the student feels is the best solution or course of action. This section should be written in the first person. It gives the student the chance to propose a solution based a knowledge of its pro's and con's and those of alternative solutions. The best papers will employ both a good offense and a good defense of the solution preferred.

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Stimulating Learning in Consumer Education by Practical Application of Course Concepts

Virginia W. Junk, University of Idaho[1]

One of the advantages of teaching consumer education is that the content lends itself to practical applications in students' lives. This abstract outlines a technique of teaching that involves students in marketplace assignments. The experiential learning experiences are designed to show students the relevance of the subject matter and to get them excited about the course content. The outcome is an interactive classroom atmosphere where concepts are reinforced by students experiences in the marketplace.

Experiential learning is a teaching technique recognized as one that reinforces concepts taught in the classroom (Bliss, Hiss, Kamins & McIntyre, 1973). This method accommodates a variety of learning styles. Other advantages include: establishes the relevancy of course content; increases retention of course concepts; encourages student-student and student-teacher rapport; and stimulates students to examine their values as they apply to consumer issues.

Overview of the Course

The author uses a series of ten experiential assignments in a consumer education course, in conjunction with interactive lecture, class discussion, group activities and presentations. Students are learning from the teacher, each other and the marketplace. The keys to the success of this method include: presenting assignments in a sequence designed to lessen students' hesitancy to contact businesses (phone contact, write a letter, work in pairs in the marketplace, work alone); providing specific guidelines and criteria for assignments; encouraging students to choose products or services to examine that they are most interested in; recommending that students are considerate of the businesses they contact (including going during less busy times, or calling first); and encouraging students to share their experiences with one another. To accomplish the latter, arranging seating in a circular fashion so that students can all face one another facilitates discussion. A brief description of the sequential experimental assignments follows.

Experiential Assignments

Consumer Hotlines

Students call an 800 number to learn about a product. This information is shared in class and helps to get students thinking about the consumer information available to them.

Evaluation of Ads

This requires identifying ads in magazines as defensive, informational or comparative, and determining the target audience for the ad.

Writing a Letter of Complaint

To make this relevant, students are required to write a letter concerning an *actual* problem with a product or service that they or a friend or family member has experienced.

Small Claims Court

Students attend a session of court, observe the participants, and comment on their opinion of the ruling.

Evaluating Food Purchases

Store brands or national brands of frozen *convenience* foods are compared between three types of stores: local, national chain, and discount.

Consumer Credit

Students visit a department store's credit department and ask questions about credit account options and charges.

Banks and Banking

After visiting a local bank, students compare three types of checking accounts and chose one explaining the rationale for their choice..

Comparing Consumer Durables

A durable the student wants to buy is researched in *Consumer Reports* and in local stores. A choice is made based on the student's buying matrix information.

Used Automobile Purchase and Repair

Students visit an automobile repair shop or used car dealer, asking questions related to costs, warranties, and financing.

Understanding Insurance Policies

Students interview an insurance agent and find out about costs of a policy for auto, health, or renter's insurance, evaluating the policy for their needs.

References

Bliss, T., Hiss, J., Kamins, L.S., and McIntyre, J. (1973). The Doing Book: An Experiential Approach to Consumer Education, Bedford, MA: Consumer Resource Center, Middlesex Community College.

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Techniques for Evaluating Student Progress in Consumer Education

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Philosophies and techniques for evaluating student progress in consumer education programs and courses are discussed. A primary objective is the enhancement of student learning.

Goals of evaluation efforts include the need to assign grades to student projects and courses, determine eligibility for certification, and evaluate programs for accreditation. This paper discusses evaluation techniques that also enhance learning.

Enhancing Student Learning

Evaluation can provide feedback into the educational process. An effective technique is to have students give a written response to a class session. At the end of class, ask students to write a one paragraph description of the important concept of the day or an unanswered question. Students improve listening and writing skills and learn to focus on key concepts. Teachers receive valuable feedback about the message actually received by students and insights into information and methods that are appropriate for the next class meeting.

I administer my own course evaluation form each semester and use the results to refine the course for the next semester. Students are asked to state the strengths and weaknesses of the class and rank the value of class learning activities. One of my colleagues administers her end-of-term evaluation mid-semester so that modifications can be made in the course to help currently enrolled students.

Student Involvement

Education should help students become self-directed learners. Evaluation can facilitate this process by helping students evaluate their own learning. I encourage students to evaluate their own work. To do this, I distribute the score sheets that I will use in evaluating class that project. This process stimulates students to ask questions about the purpose of the assignment, required components, and standards that will be used in evaluation. Students gain experience applying evaluation criteria to their own work.

I also involve students in writing examination questions which may be used on the test. Students tell me that this method helps them focus their study effort. I have found that the questions and answers help me identify concepts that need further explanation or discussion.

Perspectives on Evaluation

Both students and teachers have perspectives that should be considered in planning for evaluation. Teachers may want to know the level of student learning, the effectiveness of educational strategies, and the progress being made towards course and program objectives. I start every class period with an opportunity for students to ask questions and encourage students to write down questions that arise when reading assignments and reviewing class notes. Sometimes I give students a list of questions to use when studying for an essay examination. This method helps students focus their studying and encourages them to identify and explore relationships between concepts.

Students are active participants in their own learning and have perspectives on evaluation. They may ask: What am I learning? What am I supposed to be learning? Will it be on the test? How will I use this information? How does this fit into my understanding of the world? If we want graduates of our programs to be independent learners, we have to help students answer these questions.

Timing of Evaluation

Evaluation should be an integral part of any curriculum, course, class session. At the beginning of the semester, I survey students about course expectations and preparation for subject matter. I have found that this gives me valuable insights about my students. During the semester, I encourage feedback using techniques discussed in this paper. At the end of the course I look for closure on concepts and evaluation of course activities.

I have presented a philosophy of assessment that extends beyond assigning course grades. I challenge you to go back to your classroom and look for methods of evaluating students that will feedback into enhanced student learning and influence the direction of learning in the present and future.

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Impacts of Emerging Banking Reform on Consumers: A Federal Policy Perspective

Peggy Miller, Consumer Federation of America

As the C.F.A. Banking Legislative Representative, Peggy Miller represents 240 organizations on national consumer banking policy, including coordination of national coalition efforts, director of advocacy and policy development. Previously, she was Vice-President, Policy and Government Relations for the National Center for Appropriate Technology where she supervised the development of programs and policies in sustainable agriculture, safe energy, and housing, and mounted national coalition campaigns on resource conservation. She had earlier served in various positions involving community development and resource managment.

The implications of bank reform and the current bank crises could greatly impact our everyday lives in the next few years. "If you can't trust your banker, who can you trust?" The simple fact that that old adage no longer applies says it all. We have a rapidly changing system on our hands, with banking issues and Congressional activity reported almost daily in the press, banks getting into new, risky products, and increasing cases of consumer deception.

Ignoring Congress, important decisions are being made by the regulators themselves who have a capacity for putting out regulations virtually daily. If those regulations are not thought through carefully, loopholes are created and these loopholes create major bank manipulation. In addition, Congress is daily communicating with those regulators to ensure that much policy occurs through regulation rather than legislation. They would rather not have these issues come up to Capitol Hill, where the public would then know about their role. That game continues, and the implications are enormous.

One of the problems is that consumers and families (particulary those without a great deal of income), tend not to care, or tend not to understand the relevance of these decisions. On the other hand, persons with a great deal of money to deposit and invest are quite aware of the implications and are quite involved in the process.

Decisions now being made could change the entire banking system, a system that the public currently believes in and hopes will continue. Consumers have come to accept insured coverage, checking account and savings account services, and that we will receive a reasonable return on our money. Up until a few years ago, we accepted that the whole system was safe and secure. There was no talk about risk. In prior years what consumers cared about were questions on such issues as disclosure of banking terms, so that we would be able to shop more wisely, and the cost of products and services. There have been efforts for better disclosure, for better laws to give us more credit, for improved services. These efforts continue such as to pass Truth-in-Savings and Basic Banking legislation.

In the last few years, however, there has been a major change. That change has been evidenced through the thrift crisis, and is now demonstrating itself through what is being called the bank crisis. Today, consumers ask other questions which include the following: What is happening to the structure of the industry and as it relates to our everyday lives? Will we continue to be able to get savings and checking accounts? Will we be able to get credit for our every day needs? What is that credit going to cost us? What is going to happen in terms of things that we care about?

We tend to like a variety of small businesses in our neighborhoods. We tend to like a variety of neighborhoods and the ability of neighborhoods to remain strong and flourishing. But such community structures are diminishing, and have been for 15-20 years. As more and more people become aware that something is afoot that is changing the society around us and is removing our ability to control that society, there is a growing feeling of hopelessness, of lack of power,'and lack of input. There remains, however, no real understanding of what we can do about it. In the banking world, issues are complex, and we feel less in control. We hear about Treasury proposals being aired in debate, and the Bank Insurance Fund's need for recapitalization. We've recently heard that a few hundred more banks are going to go down shortly, and we see various articles in the press about the impact of various proposals. Relating these issues to our everyday lives is difficult, but we must try because they impact our lives immensely. From our standpoint at the Consumer Federation of America (C.F.A.), the proposals that have been put on the table this year are extremely serious.

One of the concerns is that a turning point is coming related to the growing control on the international level, as the U.S. works toward merger with the European Community. There is a current push in Congress by many who are endeavoring to change our financial system to allow U.S. businesses to invest internationally, as well as for international businesses to invest here. The proposals on the table to accommodate this kind of change are supported by major banks, by Citibank, J.P. Morgan, Chemical Bank, and major money centers in the United States. German, Japanese, British, and French banks very much want to invest in the U.S., but don't like doing so currently because of state restrictions, which hamper their ability to move in and buy up our banks. Currently international banks own about 25% of our bank assets. Their near-term goal, they say, is 40%.

Is that important to us as consumers? Is it important whether we have increased foreign ownership of our bank assets; i.e. land, real estate, and other forms of securities. Let's think about that. French banks tend to be state government banks, meaning if they buy our banks, we then have strong control coming in from a governmental force. Is this in our best interests? German banks are the most capitalized at the current time. The Treasury proposal that is on the table right now would allow any highly-capitalized bank to buy quickly. The proposal also proposes interstate branching, nation-wide branching, whereby a highly-capitalized bank could move in and buy up and start branches throughout the entire country. What does this mean to consumers? Will we get better service? Will they give us better loans? Unfortunately, statistics portray that with larger sized banks, a streamlined system and branching, fees severely increase for checking and saving accounts and other banking services. For example, Virginia small banks offer low cost services 71% of the time, but their large branch banks offer such services only 9% of the time. Larger banks have the highest credit card rates, i.e., 20%.

Of greatest concern is the unwillingness of large branch banks to continue lending in the community. They don't want to lend to small businesses, but they do want local deposit dollars. In fact some have been frank enough to admit that what they are trying to develop is a deposit franchise. They build deposit dollars which are then loaned out wherever the highest profit margin is. Financial discussions at the moment suggest that the highest profit margins are going to be in Eastern Europe and Kuwait. What does that mean to consumers?

If the Treasury proposal were to pass, we would have the capability for all large banks to move much more rapidly into the system, into individual states, where they can buy up banks, start branches, and close those that they don't want to operate. As they closed a lot of smaller banks down, this would result in severe concentration and consolidation. We would have far fewer banks and the resulting banks, in our opinion, could very easily be highly costly to consumers in terms of both everyday functions, and policies that the public would have no control over, such as credit being available in the local communities. We have seen this occur in a number of areas when larger banks move in. In fact, we have been told that in New England that is the purpose; that New England's economy is on the downside, and the intent is to move in purchasers, close banks, and move deposit dollars elsewhere. This kind of action will cripple the economy. We at C.F.A. oppose it because it is not policy in the best interests of this country and of our people, and it's also not good economic policy. It might be advantageous for the owners of the larger banks and for those dealing purely on a global scale. But will it be good for the people in this country?

I'm worried about concentration, and about the implications of increased foreign ownership. I do believe that there are many areas where lending back and forth across all national lines is very important and will facilitate great progress. But I still believe very much in a fundamental economic structure, based on a foundation of strong neighborhoods, localities, states, and regions. Through strong basic structures, we can achieve a good strong overall national economy, one that can contribute to a very strong international structure.

Why are we seemingly trying to accommodate larger size banks to move swiftly into our country? Some of our banks point to Japan, or they point to Canada, or Germany and they say, "look, their banks are huge! Look at our banks, they're tiny in comparison. We can't compete". I would, in response, ask two questions: In those countries, how do the consumers feel about the size of the banks? What are they getting out of their system, i.e. how is their system different from ours? Japan, for example, has two separate systems: The very large banks which have grown because of favorable trade balances as well as very different long-term economic development (which we as of yet have not achieved in this country); and also a system in which they use their post offices to gather household savings for free. In that system, they don't charge people anything, and they then move their money back through the government to such things as housing and transportation (this is the money that built their bullet transportation system, for example). If we allow in this country a consolidation along the lines of what we see in Germany or Japan under the argument that bigness is needed, without a correlating counter system for the people in this country which allows both access to reasonably priced checking and savings accounts as well as a mechanism for holding in some deposit dollars, we will have serious problems. We would also need a mechanism to provide credit in this country where needed. If we allow interstate branching, nation-wide branching, without counter policy development, we could easily allow for severe consolidation without retaining any of the banking services that we hold as necessary. We at C.F.A. are extremely worried about this. We have been scrambling to analyze the statistics because of what we were hearing back from our member organizations which are scattered around the United States. What we hear is "whenever branching happens, we lose. Prices are shooting up. We seem to not be able to get credit. If this goes bigger, we're real worried about what is going to happen".

Right now, there is a international group of people that meets on a monthly basis, a group called the Baussel Group. They meet in Switzerland to develop the international standards that are starting to guide our banks as well as the banks in Europe and Japan. They also develop systems for when U.S. banks and the U.S. Treasury will bail out certain depositors, and when foreign countries will bail out certain depositors. A problem occurs in that the Treasury proposals that are on the table, and that are also submitted to this group, still keep the entire system linked to our Treasury. If we allow interstate branching, as proposed by the Treasury where anyone can come in and branch in any state with no restrictions, the states will have no control. Any corporation could buy any bank. We have been told that AT&T has a proposal on the table; and that GE has a merger proposal on the table. This type of combination and consolidation between corporation, retail, and banking, has never before been allowed in this country; mainly because if consolidation of that nature were allowed, the power structure would become so enormous that our regulators could not touch it. Regulators would not be a match for industry wizards of money movement and manipulations with all their capital and legal power. An example of this is recent articles in the Wall Street Journal and Washington Post which described a bank called BCCI (an international bank) that has been owning American Security illegally for ten years. Our regulators, even though they tried to figure it out, couldn't, and were not able to regulate the activities. This is the kind of thing which would happen, an example of the consequences of allowing this type of proposed consolidation and control. Our regulators have been telling me at meeting after meeting, "we couldn't stop this loss of control from happening". But there is strong lobbying for this proposal.

In the case of interstate branching, there would be some efficiencies. For example, ATMs across the United States. When we go up to Capitol Hill, we are asked, "Isn't that what consumers want; to be able to use their ATM and credit cards anywhere?" We point out that Citibank and the other money center credit cards have the highest interest, and are not competitive at all. As discount rates have gone down, the credit card rates haven't. This does not benefit consumers. It does provide them with the advantage of being able to use cards nationally and probably internationally; but we would exchange a great deal in return for that. We're trying to figure out if there are any ways to allow some of these efficiencies without giving up on the current structure which does allow for the smaller banks to keep money in the communities and to move money back.

The Community Reinvestment Act (CRA), an ongoing battle trying to get banks to put more money back into their communities, has been a long fight. Yet, it is much easier fighting against a locally owned and controlled bank where there exists some local organization to work with, or where it's possible to go one-on-one with a particular bank. In Los Angeles, right now, there is a group trying to conduct CRA negotiations with a Japanese owned and controlled bank in Los Angeles, headquartered in Japan. The CRA law requires that the group meet with the actual owners; the Japanese owners say to meet with their managers in California; and thus things drag on. This is an example of the lack of control that will occur if we allow this proposed policy to prevail. This is not to say that Japan or other countries are any worse or better than our large banks that are U.S. owned. I admit that I sometimes wonder if maybe Germany would do a better job running some of our banks compared to what our own money centers are doing: they are far more traditional in their lending patterns; they didn't get into less developed country debt in the same way we did; they didn't jump into junk bonds, or leveraged buy-outs to the same degree. Those are all lending practices that led to the near collapse of our money centers.

What we at C.F.A. are trying to stress to the Congress and to consumers is that there must be a better way. We acknowledge serious problems in the savings and loan and banking industries; problems beyond mismanagement and supervision. The banks that are in crisis all lent into a too-concentrated area; they lent into real estate and leveraged buy outs. Their portfolios were simply too concentrated. Congress claims that we need interstate branching to be able to loan in different states and spread risk. We respond that an institution can lend in thirty states and still become insolvent if they're only in one industry, such as real estate.

The solution is not geographic diversity. We have allowed over the last fifteen to twenty years the various departments--energy, agriculture, commerce--to push for policies that have consolidated all of our industries. We've seen our agriculture industry slowly become consolidated, and we've lost many family farms. We've lost jobs, and small business throughout the Midwest and many of the agriculture states. Just in the last ten years seven to eight million sole proprietorships have been forced into lower paid, service sector jobs, and we then lost many rural banks. Today's bank health problems exist because we have systematically had policies which have stimulated concentration and moved people away from fairly well-paid sole proprietorships where they earned a decent income, and were able to buy a home or rent a farm. It is dramatic

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when you look at the statistics. These people are earning far less, and are not particularly happy about what they're doing. This has shrunk the bank's capacity for profitable lending and so has led to bank ill-health. Diversification with industries would help. Take a look at energy; there's a nine-to-one job ratio in renewables versus oil. Such increased employment would do wonders for bank health since it would start many sole proprietorships around the country, and those people would need loans from their banks. This credit demand would stimulate better lending.

On the other hand, if all of the money is placed in big industries where people are forced into lower paid jobs, problems in our bank situation result. Large banks, just by their deposit concentration, choose to lend to big industries and then they fail when that industry fails. In Boston, banks lent in a concentrated way to electronics; when the electronic industry went down, they went down.

The economic battle going on today is whether or not we want a fairly diverse economic system. We can go either way. Departmental policies are stimulating current conditions of concentration. They can change their ways. They can help to stimulate diversification in our energy system; they can help to stimulate renewable energy, and to encourage energy conservation. We are suggesting to the regulators that all these policies we have been concerned about; i.e. energy conservation, diversified agriculture; all relate to bank health. It also relates to the fundamental economics of what we want in our neighborhoods and in our individual lives. The bank policy that's being talked about and whatever decisions are being made there will have severe impacts. Currently, about 20% of the households in this country are out of the banking system; if bank fees go up there will be more consumers who can no longer afford a checking or savings account. There are very serious connections between who receives credit, cost of banking, who is saving, and what that has to do with the deficit situation. Savings contribute to lending capacity. Credit contributes to economic stimulation; jobs, and greater payment of taxes; which help pay for the deficit. But if we see the bank fees continuing to rise, more people will drop out of the banking system. Then credit will become more restricted. We'll see more small businesses close. We'll keep hearing about people having to move their jobs or must find work elsewhere.

As the whole fundamental structure in this country is being debated, we who are representing the consumer interest must become involved. Those who are lobbying the Congress are certainly analyzing issues and are certainly involved. The lobbyists I confront everyday going up to the Congressional offices and senatorial offices have high stakes in this debate. Consumers all have a high stake in it too. We must get more involved in the process, we have to analyze what is best and what policies will help. If we don't care enough to call a Congressman or a Senator and we don't get other people to call and we don't stay involved in the process, it will move away from us and we will have a situation in which we have no control. More and more of the control will come from an international level. You, your colleagues, and your students need to pay close attention as you see reports in the media and other publications, realizing that this will strongly impact all of our lives, and will be the focus for major fights in the next two or three years. Please, get involved.

Consumer Policy in Newly Emerging Market Economies: The Eastern/Middle European Countries

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In this paper a framework for consumer policy in less developed countries is presented. Consumer markets and consumer characteristics in Eastern/Middle European countries are then compared to those of less developed countries. The result is a set of recommendations for consumer policy development in Eastern/Middle European countries.

Introduction

As Eastern/Middle European countries try to establish market economies after having centrally planned economies for more than forty years, it is important to consider consumer policy directions these countries should take. If consumers do not respond to markets or if markets do not respond to consumers, the seed is planted for consumer dissatisfaction which can result in social unrest. In a newspaper article on cigarettes in the Soviet Union it was noted that "So acute is the situation in the city of Perm, in the Urals, that purveyors recently began marketing packets of tobacco dust that had been used earlier against garden pests. That triggered a demonstration...by a tobacco-starved crowd of people who lay across streetcar tracks, disrupting traffic, before moving on to register their protest at City Hall." (Soviets fired up over lack of cigarettes 1990:1A)

A Consumer Policy Framework

Policies to enhance the ability of consumer to make good decisions have been classified as protection, education and information (Thorelli and Thorelli 1977). Consumer protection consists of "measures to safeguard consumer rights in cases which consumers themselves cannot be expected to enforce these rights....[while] consumer education provides the knowledge foundation necessary to develop citizens into intelligent consumers, or at least to make their self-development into emancipated consumers possible. Consumer information in a general sense comprises all data about individual products, brands, and models in the marketplace." (Thorelli 1981:202)

Thorelli and Thorelli (1977:49-50) noted that to achieve freedom of choice consumers must be mature. That is, they should have an understanding of decision making and budgeting, and a sense of judgment when making purchase decisions; they also need an appreciation of the nature of a market economy. Once the requisite level of maturity is achieved, consumers need information to identify those product characteristics consistent with wants and needs. If consumers are to be informed, Thorelli and Thorelli argued, general product information is needed to allow choice among particular models of a product; however, this is predicated on the integrity of product information. It is education policy that addresses maturity; information policy that addressed consumer information needs and protection policy focuses on ways to address the deficiencies or gaps left by the two other policy types.

In less developed countries Thorelli (1981) argued that the order in which consumer policies should be addressed is protection, education, and information. This ordering is predicated on the implicit assertion that in less developed countries markets are underdeveloped and consumers immature.

Characteristics of consumer markets in less developed countries, according to Thorelli (1981), include: lack of quality control, lack of adequate transportation and storage facilities for fresh foods, and predatory seller practices. In addition official product standards are virtually nonexistent and weights and measures are often inaccurate. This market structure is set in an environment in which there is poor, inadequate information that is poorly communicated. Thorelli and Sentell (1982:5) commented that in less developed countries the "consumer may be an actor in the marketplace, but he is certainly not a partner."

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Thorelli (1981:206-208) suggested that in less developed countries consumer protection should focus on: product integrity--assurance that when a purchase is made that it is what a normal consumer would expect it to be; product quality--consistency across production runs, minimum standards and standardization; and deceptive practices. Consumer education should focus on creating an awareness of the principles of budgeting and decision making, and on how markets operate. Consumer information, while the last of the three policy types, is crucial to the development of open markets and it is important for governments to initiate consumer information programs that are providers of useful, unbiased information.

The framework for consumer policy developed by Thorelli and his colleagues suggests the following when considering consumer policies for Eastern/Middle European countries. Do the emerging Eastern/Middle European market economies have characteristics similar to those of less developed countries and are consumers in Eastern/Middle European countries immature? Should the answers be yes, then what type of consumer policies are most appropriate for these countries? These issues are addressed in the remainder of this paper.

Eastern/Middle European Consumers and Markets

> Western Europe lay in ruins in 1945, but attitudes and skills had survived. The invisible destruction in Eastern Europe is worse than the visible devastation wrought by war. Managerial talents have been blighted by a half-century under an economic system that practiced pick-a-number pricing, taught enterprises to hoard inventory and rewarded them for producing a million left shoes. Eastern Europe suffers from another distortion: the incestuous trade patterns that are legacy of the Stalinist years. Trade under Comecon, the Council for Mutual Economic Assistance, was based on a curious reverse mercantilism: the imperial country (the Soviet Union) supplied energy and raw materials that the colonies (the satellites) paid for in manufactured goods. Since the Soviet Union was chronically short of almost everything, it was an undemanding market, providing no incentive for East Europeans to develop products for sophisticated customers. (Ball 1989)

This illustrates the base from which Eastern/Middle European countries are developing a market economy. The underlying economic and social environment has given rise to frumpy 100% acrylic sweaters being produced in a Hungarian state-run factory that are marketable only to the Soviet Union (Revzin 1990); the production of shoddy products (Hillkirk 1990); bumper apple crops not being converted into apple juice because leaders refused to allow money to be spent on processing plants and transportation facilities (Reaves 1990); and a central command system that has socialized citizens to sit back and wait for instructions resulting in little individual initiative or judgment (Jackson 1990).

In an attempt to address shortages and meet consumer demands, the Soviet Union has been trying to convert plants from military to civilian production. The Zaparozhye engine plant where engines for military applications have been produced was ordered to produce, as quickly as possible, any consumer item that would be demanded by the average Soviet consumer and would be of world class quality to facilitate exporting the product--the result was a hand-powered cement mixer. Leningrad's Baltic Works shipyard is trying to produce machines to make Siberian dumplings. The Votkinsk machine tool plant which has produced missiles is attempting to produce milk pasteurizing equipment. (Schodolski 1990) Even factories that have historically made consumer products are not immune from behavior contrary to desired outcomes. In July 1989 Siberian coal miners struck with one of their primary demands being soap. A cause of the soap and detergent shortage was factory managers who attempted to meet targets measured in rubles by shifting production to expensive types of soap (Hornik 1989).

Responding to ill-conceived production targets (rather than target markets) is not the only factor limiting the ability of Eastern/Middle European countries to move toward market economies. A critical problem facing these economies is inadequate infrastructure, obsolete production equipment, and insufficient parts. The 1990 grain harvest in the Soviet Union was undermined by too many combines being idle due to a lack of batteries, spare parts and fuel (Soviets say, "No cigarettes, no harvest" 1990). Twenty percent of the 1989 grain harvest was lost due to poor transportation and storage facilities (Hornik 1989). In October 1989, 25,000 tons of food stuffs and several thousand tons of washing agents were stuck in Soviet ports due to railroad problems (Hornik 1989). The Ukrainian city of Lvov has water twice a day for a total of six hours (Hornik 1989). Much of the autobahn concrete in East Germany was laid in the Hitler era and has hardly been improved since (Jackson 1990). East German factories use equipment dating to the turn of the century (Hillkirk 1990). McDonalds spent 12 years preparing for the opening of their first restaurant in Moscow. They set up a special distribution center outside of Moscow; they planted potatoes, lettuce and cucumbers to insure availability; and they set up a dairy plant to pasteurize milk (Franklin 1990). In general Eastern/Middle European technology is out of date and is based on the philosophy of continuing to use something as long as it works. For example, the launchers for manned space flights are of the same basic design used in 1957 to send up Sputnick I and the onboard computers in the Soyuz space capsule have the capacity of NASA computers from the 1960s (Old technology on space station plagues Soviets 1990).

Even those Eastern/Middle European countries that have made significant movement toward a market economy, face daunting problems. In Poland it is no longer necessary to sneak out from work to purchase necessities. The Poles know that coats, hair dryers and other items that were once difficult to find are now readily available in stores. The catch is, however, that the items are too expensive to purchase (Newman 1990). East Germans are overwhelmed by the choices available to them. After leaving a department store in Erfurt an old woman was heard saying, "Too much, too much." (Jackson 1990). Eastern/Middle European consumers are not accustomed to advertising as are consumers in the West (Moore 1990); however, they still recognize a wide range of Western brand names even though many of the products are not actively marketed or even sold in their countries (Eastern Europeans know brands 1990).

While the types of problems noted above are largely the result of trying to make large, state-owned firms more responsive to consumers, the implications are much the same for the private sector that existed in various degrees in many Eastern/Middle European countries. Kornai (1990:138) noted that the "private firm was typically not interested in building up a solid goodwill with its customers for its products or services....To the extent that consumers were used to queues and shortages in the state-owned sector, it was generally easy for the private firm to keep its customers..."

What we have described is an economic system that does not value customer service, that produces poor quality products, that has inadequate transportation and storage, and that does not respond to consumer needs. In this system are found consumers unaccustomed to making decisions, unaccustomed to having choices, unaccustomed to prices that are not set by the state.

Eastern/Middle Europe and Less Developed Country Markets

The picture painted above is similar to the one Thorelli (1981) developed for less developed countries. Product quality is poor; infrastructure is inadequate, broken or non-existent; customer service is of little concern. This suggests the market structures of Eastern/Middle Europe and less developed countries are similar.

It is important to note, however, that while market structure in Eastern/Middle European countries possesses many of the features of less developed countries, there are several important differences related to consumer maturity. First, the average level of education is higher in Eastern/Middle European countries than in less developed countries. The typical Eastern/Middle European adult is literate while this is frequently not the case for less developed countries. Second, many Eastern/Middle European countries had viable market economies until World War II resulting in older consumers who have had significant, although dated, market place experience. However, as noted in the quote at the outset of the previous section, fifty years of central control may have destroyed the ability of even these older Eastern/Middle European consumers to act in a way needed to make a market economy operate effectively. Third, Eastern/Middle European consumers have been exposed to modern technology and mass media on a broad scale--something not true in many less developed countries.

Additional important differences between Eastern/Middle European countries and less developed countries relates to the general economic environment of the countries. While there is no data to support this assertion, it is likely that the distribution of wealth is less skewed in Eastern/Middle European countries than in less developed countries. Circumstantial support for this argument is the large savings many Eastern/Middle European consumers have amassed because there was nothing for them to purchase (Hornik 1989:63; Jackson 1990:31). Related to this, large land holdings in Eastern/Middle European countries are held by the government while large land holdings in less developed countries are generally held by private citizens.

The conclusion, then, is that Eastern/Middle European markets are underdeveloped and consumers in these countries are unfamiliar with the operation of a market. However, this is set in the context of a relatively educated group of consumers who have been exposed to and are often familiar with technically sophisticated items. The consumer policy agenda which emerges from this environment should address:

1. Product integrity and quality.
2. Development of an unbiased consumer information system.
3. Consumer education in market operation.

Eastern/Middle European Consumer Policy

Product integrity reflects the situation when products are of such low quality they do not even begin to meet their intended purpose. The product integrity problem is illustrated by the cigarette dust issue noted above. When purchasing cigarettes, consumers expect to get tobacco cut into short, string like pieces. Rather consumers received a collection of tobacco dust wrapped in paper--something substantially different from what a reasonable consumer would expect when purchasing a cigarette. Product integrity issues are addressed through the establishment of product standards that mandate minimal requirements for a product to be given a particular name.

The issue of product quality relates to whether or not products meet reasonable levels of durability, reliability, functionality, etc. This becomes a concern once product integrity is addressed. While the Trabant might meet product integrity requirements, even the casual observer would agree that it would not rank high on the quality dimension.

While product quality is addressed to some degree by standards developed to insure product integrity, the most viable way to insure quality will be the development of consumer product testing system and subsequent dissemination of the test information. If such product and service testing organizations are part of engineering schools or technical institutes then an added advantage is that students will be taught by faculty who, being involved in the testing research, will understand and be able to teach the importance of good design from both the engineering and consumer perspective.

Newspapers should be the media of choice to disseminate test information since they have been part of the social fabric of Eastern/Middle European countries. This should reduce consumer resistance to newspapers as a consumer information source. In addition product test information is a public good and publishing comparative information is a public service. As newspapers are privatized, it may become necessary for governmental authorities who oversee markets such as housing, personal loans, and durable goods to mandate the publication of such information. The principle is the same as requiring information to be disclosed on labels or in advertising.

The need to develop an unbiased system to produce consumer information will also be addressed, to a large extent, by the comparative testing mechanism outlined above. However, it may still be necessary, at least in the early stages of the development of a market economy, to develop standards of information quality. The uninitiated choice maker is especially susceptible to puffery or outright lies. This type of disinformation must be controlled.

The need to educate Eastern/Middle European consumers as to how market economics operate is paramount. In the past many Eastern/Middle European consumers only choice was buy or not-buy; there was no choice between models. Efforts are underway to help consumers in some of these countries understand how a market economy functions, but it is important that these efforts be enhanced. Perhaps the informal education model underlying the Cooperative Extension Service is a vehicle that should be considered.

Finally, this paper focuses on consumers per se and on the information needed by consumers to effectively operate in a market economy. An important corollary to this perspective is to consider how sellers respond to consumer information. This is the topic of a paper under development.

In closing we see a need for Eastern/Middle European countries to develop basic product standards to insure the integrity of the products sold in the market. Once a minimum level of product quality is established through standards, it is important to develop a consumer product testing system that provides comparative test information through the mass media--preferably newspapers. All of these activities need to be undergirded by an educational effort designed to help consumers understand and function effectively in a market economy.

References

Ball, Robert. (1989, December 4). Go east, young man? Time, p. 65.

Eastern Europeans know brands. (1990, June 29). The Columbus Dispatch, p. 2B.

Franklin, Peter D. (1990, March 4). Dear Dave: Don't send Wendy's to Russia. The Columbus Dispatch, p. 2G.

Hillkirk, John. (1990, July 3). E. Germans bone up on capitalism. USA Today, p. 2B.

Hornik, Richard. (1989, December 4). Winter's bitter wind. Time, pp. 62-65.

Jackson, James O. (1990, July 30). Speeding over the bumps. Time, pp. 30-31.

Kornai, Ja'nos. (1990). The affinity between ownership forms and coordination mechanisms: The common experience of reform in Socialist Countries. Journal of Economic Perspectives, 4(3), 131-147.

Moore, Martha T. (1990, July 3). U.S. firms hope ads are on the mark. USA Today, p. 2B.

Newman, Barry. (1990, March). Poles find the freeing of the economy lifts supplies and prices. Wall Street Journal, pp. A1 & A10.

Old technology on space station plagues Soviets. (1990, July 26). The Columbus Dispatch, p. 3A.

Reaves, Joseph, A. (1990, March 18). Romania eyes piece of the pie. Chicago Tribune, section 7, p. 3.

Revzin, Philip. (1990, April 5). Ventures in Hungary test theory that West can uplift East Bloc. Wall Street Journal, pp. A1 & A18.

Schodolski, Vincent J. (1990, March 18). Soviet haste for reforms makes waste. Chicago Tribune, section 1, pp. 1 & 11.

Soviets fired up over lack of cigarettes. (1990, July 30). The Columbus Dispatch, pp. 1A & 2A.

Soviets say, "No cigarettes, no harvest". (1990, July 25). The Columbus Dispatch, p. 5A.

Thorelli, Hans B. (1981). Consumer policy for the Third World. Journal of Consumer Policy, 5(3), 197-211.

_____ and Sarah V. Thorelli. (1977). Consumer Information Systems and Consumer Policy, Cambridge, MA: Ballinger Publishing Company.

_____ and Gerald D. Sentell. (1982). Consumer Emancipation and Economic Development: The Case of Thailand, Greenwich, CT: JAI Press Inc.

The Education of Central Planners

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Economic and consumer education programs for leaders and decision-makers in centrally planned economies which are in transition to market-oriented economies are discussed. The paper is based on personal observations and experiences in Poland, Hungary, and Czechoslovakia. The need for and focus of such educational programs are discussed. Suggestions are made concerning the content and strategies for delivery of such programs. Resource needs and potential impacts and benefits are briefly discussed.

Introduction

Focus in this paper is not on training central planners per se but on economic and consumer education programs for those who will be providing leadership and making decisions in countries where the transition from centrally planned to market-oriented economies is occurring. This is true of all Eastern European countries, however, different countries are at various stages of this transition. Poland, Hungary, and Czechoslovakia are the furthest along in the transition and are the most advanced economies in Eastern Europe. The combined population of these three countries is about one-fourth of the U.S. population and their combined area exceeds the combined area of Ohio, Indiana, Illinois, Kentucky, and West Virginia. These three countries along with the former East Germany are critical to the viability and strength of Eastern Europe. If these countries are not successful in making the transition from centrally planned economies to market-oriented economies, the prospects for countries such as Yugoslavia, Romania, Bulgaria, and Albania is not very encouraging. These latter four countries have severe internal political and economic problems which have to be resolved before serious progress can be made in the transition toward market-oriented economies.

The discussion which follows is based mainly on observations and experiences in Poland, Hungary, and Czechoslovakia. In the next section, attention is devoted to the need for economic and consumer educational programs. This is followed by some suggestions for the focus of such educational programs. After that, suggestions are made regarding the content and strategies for delivering such educational programs. This is followed by a brief discussion of needed resources to conduct such educational programs. The paper concludes with a brief discussion of some potential impacts and benefits of economic and consumer educational programs in these transitional economies.

Situation and Need for Educational Programs

For more than 40 years, Eastern European countries have been under communistic rule and have had planned economies. In that environment there was little need for individual decision-making, leadership, and entrepreneurship. Hence, only a few individuals that had such skills are still alive and they are elderly. Most people that have lived in this type of an environment for all of their lives or more than 40 years of their lives are very cautious and risk-adverse. They have not had to bear any risks and they are reluctant to assume any risks in a market-oriented economy which they do not understand and can't even visualize how it functions. Many are skeptical about markets and do not have confidence in them. Yet as the planned economies are making the transition to market-oriented economies, individuals will have to assume risks and exercise leadership and entrepreneurship. This situation offers challenging opportunities for economic and consumer educational programs.

The four to five decades of planned economies in Poland, Hungary, and Czechoslovakia left these countries void of the infrastructure necessary for a market economy to function effectively. This is one of the reasons people in these countries have difficulties understand and visualizing how market economies function. Most of the institutions necessary for a market economy to function, and which most of us take for granted, do not exist in these countries. These economies were left without financial institutions, information systems, communication systems, wholesaling, retailing, distribution systems, commodity markets, and futures and options markets. It is surprising how much commerce is carried on in a struggling manner despite the lack of these important institutions and infrastructure. In addition, because of the low priorities placed on quality of natural resources and the environment, the planned economies left these countries with some severe pollution and environmental problems. Rector Palous of Charles University in Prague summarized the environmental situation using an analogy to an aquarium. Palous indicated when the communist took over they took over an aquarium and what they left behind when they were finally removed from office was a bowl of fish chowder. Palous further commented that a challenge facing the Czechs, and the same would be true for other economies in transition, is whether the bowl of fish chowder can be converted into something which once again resembles an aquarium. This analogy applies not only to the natural environment but also the economic environment.

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People in these countries desire technical assistance from the West in the form of educational programs which will enable them to better understand the economics of a market economy and the behavior of consumers in a market economy. There are opportunities for educational programs which deal with all aspects of a market economy from suppliers of basic inputs through production, marketing, distribution, and to the final consumers. But to be effective, the educational programs must take into account the status of the institutions and infrastructure needed for a market-oriented economy to function. People within these countries will have difficulty relating to educational programs designed on the basis of institution and the infrastructure that exists in the U.S. and such educational programs will be of limited usefulness.

Focus of Technical Assistance Education Programs

To be effective and to obtain the greatest impacts from resources available for economic and consumer educational programs, it is critical that appropriate audiences be identified and targeted. Depending on the specific details of the economic or consumer educational program, managers and decision makers at various levels from production to retail sales and for some consumer education programs, household heads or individuals in households who make decisions about food and clothing purchases and meal preparation might be the audience which could benefit directly from the educational program. And even though this might be the audience that could derive substantial benefits from the educational program, it is doubtful that would be the audience to target for technical assistance educational programs. The resources available for these kinds of educational programs are limited and targeting the users of the educational programs would result in a demand for the programs that would simply overwhelm the resources available to effectively deliver such programs. If the greatest impacts and benefits are to be derived from the economic and consumer educational programs audiences need to be selected to maximize leverage of the limited resources.

One way of leveraging limited resources for technical assistance educational programs is to direct the educational programs at the educators indigenous to the country, i.e., educate the educators or teach the teachers via collaborative educational programs and let them transfer the information to the user clientele. This approach involves a trade off between time and broader dissemination. It may take more time to reach the user clientele because of the time required to teach the teachers but once the teachers have acquired the knowledge then it can be transferred to a broader clientele rapidly.

A critical clientele in all of the economies in transition are the policy makers. They are continuously making decisions and formulating policies, with or without economic and consumer information, which affect the activities of businesses and consumers. Consequently, these decision and policies may affect the types of economic and consumer educational programs which may be plausible. Reaching policy makers should be of high priority in any technical assistance educational programs. Because of the need for expediency, some economic and consumer educational programs could be targeted directly to the policy makers, however, most such educational programs would be more effective if done in collaboration with indigenous scholars and teachers. Information and technology from the West is desired and sought after by Eastern European countries and its desirability is even further enhanced if transferred by indigenous personal. But most critical is that the policy makers be high on the priority list for participating in economic and consumer educational programs since their decisions and policies immediately impact the activities of businesses and consumers.

Program Contents and Delivery Strategies

The content of educational programs will vary with objectives and the particular issues being addressed. In Poland, Hungary and Czechoslovakia, the more important and useful types of educational programs would be ones concerned with the role, contributions, and operations or functioning of institutions and components of a market economy. In these countries, the economies are in rapid transition to some type of market-oriented economies and a better understanding of why these components are needed, how they function, and what they contribute to the overall functioning of a market economy is needed and necessary. The following are some topics which are worthy candidates for educational programs.

1. The role, contributions and operations of financial institutions in market economies.

2. The role, contributions, and operations of various types of information systems, including communications, in market economies.

3. The role, contributions, and operations of wholesale firms in market economies.

4. The role, contribution, and operations of retail firms in market economies.

5. The role, contributions and operations of distribution systems, including transforation, in market economies.

6. The role, contributions, and operations of commodity markets in market economies.

7. The role, contributions and operations of futures, options, and stock markets in market economies.

8. The roles and contributions of various levels of management in firms in market economies.

9. The role and contributions of grades and standards in market economies.

10. The role and contributions of nutritional and food safety information in market economies.

11. The role and effects of resource use and environmental quality regulations in market economies.

12. The role of incentives, disincentives, and motivation in market economics.

This is not an exhaustive list of potential topics but a list of topics of concern to people in the economies in transition and the topics are basic to the functioning of a market economy.

There are many strategies for carrying out economic and consumer educational programs and there is no single strategy that is clearly best. Exchange of scholars, training of graduate students, and collaborative research and educational programs are plausible options which have been successful. These strategies generally involve a small number of foreign scholars and require considerable time before they have substantial impacts in the foreign countries. Given the rapid rate at which the transition from planned to market-oriented economies is occurring in Eastern Europe, additional delivery strategies which require less time and involve greater numbers of people need to also be considered. In-country workshops and short-courses merit serious consideration. These workshops and short-courses could be taught in two phases. The first phase would be taught in-country and would reach a larger group of educators, teachers, and managers. Normally, these workshops would be three days to a week in length but some might be several weeks in length depending on the interests and the availability of the participants.

In a second phase, short courses would be taught at universities or other institutions in the U.S. The second phase would involve a smaller number of participants who could be chosen from participants in the first phase or they might be new participants who already have the level of training and background equivalent to, or greater than, participants in the first phase. The length of time for the second phase would range from a couple of months to a year. Depending on the length of time of the second phase, the short-courses could be complemented with regular academic courses, special executive training types of courses, internships in businesses and agribusinesses, and visitations to boards of trade, stock exchanges, private firms, and government agencies. The workshops and short-courses could provide training and first-hand observation and experience in a timely manner. And the workshops and short-courses could complement the strategies of exchange of scholars, training of graduate students, and collaborative research and educational programs.

Required Resources and Third Party Funding

Unfortunately none of the countries in Eastern Europe can afford to purchase the technical assistance educational programs which have been discussed. Poland, Hungary, and Czechoslovakia all have large debts with Poland having the largest and Czechoslovakia the smallest. Gross national products in these three countries are declining and they are experiencing double digit inflation. All three countries lack hard currency and hence are not able to purchase needed technical assistance or pay for educational programs.

Unless third party funding becomes available for technical assistance and education programs in Eastern European countries, economic and consumer educational programs will be nothing more than rhetoric. U.S. universities and businesses are capable of and must provide the professional expertise. This professional expertise will need to be financially supported by funds from the federal government, private firms, and national and international institutions that fund technical assistance and educational activities. A mini-Marshall plan could do wonders for Eastern Europe.

Potential Impacts and Benefits

Economic and consumer educational programs would facilitate the transition from planned to market-oriented economies in Eastern European countries, particularly in Poland, Hungary and Czechoslovakia. These three countries are the "backbone" of Eastern Europe. They are critical to the stability and strength of Eastern Europe. If these three countries fail to make the transition to market-oriented economies, there is little hope that the other Eastern European countries will be able to make the transition.

Poland, Hungary, and Czechoslovakia offer some potential trade opportunities in products such as protein feed, poultry and beef products, fruits and vegetables, and possibly feed grains. However, they will not be able to import any of these products until they solve their internal financial problems and acquire hard currency.

These three countries offer opportunities for investment of U.S. and other countries' capital into their industries. These countries were known for the production of high quality products such as heavy equipment, precision instruments, musical instruments, crystal, and china. The countries that provide technical assistance will have a competitive advantage on investment in industries in these countries.

Europe 1992, The Cost to Consumer Sovereignty

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For producers, the benefits from a unified European Community (EC) could be substantial. Consumers may also gain if the removal of trade barriers increases competition thereby improving product quality and reducing price. However, the creation of homogeneous markets may reduce cultural diversity among EC nations, which could ultimately reduce consumer choice and sovereignty.

Removing the Trade Barriers: Homogeneous Markets

"The goal of 1992 is to move people, products and services among European Community (EC) nations with the same ease as they cross U.S. state borders. Removing barriers to trade could save European marketers $200 billion over the years, experts say." (Parry, 1988)

"Legislators at EC's Brussels headquarters say 1992 will create a single European market of more than 300 million consumers, rivaling the U.S. and Japan in world trade power." (Parry, 1988)

As the aforementioned quotes indicate, from the supply side of the market, the benefits of having a unified European Community could be substantial. Producers, suppliers and marketers are using such terms as Pan-European brands, global brands, Euro-markets, Euro-consumers, homogeneous consumer markets and homogeneous purchase behavior to characterize what they hope will be the European market of the future: a larger group of consumers with similar tastes and preferences purchasing similar goods and services that can be marketed across EC countries. Economies of scale alone could account for most of the gain from expanded market size. In addition, the removal of trade barriers will generate increased competition, which economic theory predicts will increase the quality of products. There will be a wider choice of brands at lower prices and a wider distribution of products. (Roberts, 1989) The increased market size and production opportunities will also tend to standardize goods and services and generate a more homogeneous but complex environment. (Vandermerwe, 1989)

In order to insure that the unification of the EC will be successful in creating a homogeneous consumer market, producers and marketers have been focusing on the existing similarities across the EC nations. Although some "new" Pan-European goods or brands will appear on the scene, many will be adaptations of existing products or brands under new names. Although producers are well aware of language, historical, social, economic and cultural differences among the EC nations, they are purposely minimizing these differences and emphasizing consumer similarities. The attitude that prevails is that eventually consumers are likely to become similar in their tastes and preferences for products once similar products are available, so why not speed up the process. Further, "the blending of tastes, life-styles and purchasing behavior will eventually accelerate especially if we consider trends in electronic media and information technology." (Vandermerwe and L'Huillier, 1989)

Diffusion theory is often used to explain why certain cultures or groups of consumers may be more inclined to accept new products than others. As noted by Gatignon and Robertson, the focus of much of the empirical research on consumer diffusion theory has tried to identify profiles of consumer innovators for various products; those characteristics of consumers that would increase the likelihood that a new product would be adopted. (Gatignon and Robertson, 1985) Innovators are usually highly educated, have relatively high incomes, are risk takers, and are younger and more socially active and mobile. (Robertson, Zielinski, and Ward, 1984)

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Support for the notion that consumers with the aforementioned characteristics are similar, even across nations, can also be found in recent literature on Europe 1992. For example, researchers have monitored the consumer behavior of various subcultures within EC nations and conclude that within these subcultures, tastes and preferences are more similar than not. For example, the youth subculture across the EC exhibits almost identical purchase behavior for selected goods and services. Tastes in music, sports, and cultural activities for teenagers are so alike that a common EC market seems inevitable. (Martin, 1988) Electronic games and other high tech products, as well as the soft drink market, are also rapidly being integrated into youth markets across the EC. (Martin, 1988) Termed the "new wave young" this market has already exhibited preferences for similar lifestyles. They are very fashion and style conscious and are being looked upon as the Pan-European consumers of the future. (Anonymous, 1989).

Another subgroup of innovators whose consumer behavior lends support to the notion of a common EC market are the wealthy. Regardless of nationality, upper class consumers purchase the same status and luxury items such as Rolex watches, Cartier jewelry, perfume, and expensive cars. As one researcher concludes, snob appeal goes across borders. (Anonymous, 1989) Upscale images are not unique to any one nationality. (Martin, 1988). The Veblen effect and conspicuous consumption will have their role in the unification process to the benefit of the producers of these goods.

Producers are also viewing the existence of Sky Channel, a television network broadcasting across the EC, as the vehicle that will facilitate advertising to all EC nations. Global advertising, taking into consideration language differences, can create uniform tastes and preferences through common exposure. (Beyma, 1989) Some marketers have suggested separating the EC into only two sectors: an east and a west market using the Rhine River as the natural divider. This division would account for the majority of language and cultural variations and still offer mass marketing appeal for Sky Channel and other media. (Martin, 1988) If characteristics of innovators are taken into consideration, producers might also consider a division between poorer and wealthier consumers as measured by their incomes and/or access to goods and services.

The economic theory of the firm also offers support for the creation of a homogeneous EC market. Unification can create economies of scale which will increase efficiency in the production and distribution of products. Firms can benefit from decreased average costs of production given increased quantity sales and hence, product quality can improve. This will lead to increased competition among producers and lower prices, which benefits consumers. (Geroski, 1989) This theoretical arguement, together with some evidence from a few selected product markets by subcultures that homogeneous marketing will succeed, has given producers the incentive they need to take advantage of relaxed trade barriers and expand across EC nations. However, support can also found in the literature regarding cultural variation among EC consumers which would not support the promotion of Pan- European brands or marketing.

Maintaining Cultural Diversity

Many producers are realizing the importance of individual consumer preferences, many of which are culturally based. Consumer behavior literature has focused both theoretically and empirically on the impact that culture has on consumer purchase behavior. Whether culture is broadly defined by nationality or more narrowly defined by selected socio-economic and demographic charcateristics, the impact of culture on consumption is well documented.

As these cultural variations pertain to the EC, producers may find the expansion into common markets difficult. For example. food manufacturers are aware that in France, Italy and Spain,

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consumers favor oil based cooking whereas in Germany and the UK, margarine and butter are preferred. (Martin, 1988) Kelloggs has had to alter its corn flake commercial for each of the EC countries given various sets of regulations in recent years. With the coming of 1992, even if these regulatory differences are removed, they will still most likely continue to vary their ads in consideration of cultural differences. (Cote, 1988b). The French prefer top loading washing machines; the British, front loading. The West Germans prefer high speed spinners whereas the Italians favor slower machines. (Anonymous, 1989) Even the exact same product may be received differently given packaging, labeling and brand name recognition of common household items. Sara Lee's product Radox, a shower gel that was the top selling bath soap in the UK, was confused outside of the English market as being Raid, the bug killer. Alternatively, the product Sanex, A Spanish soap, did not do well in England because the name sounded like a feminine hygiene product. (Weiner, 1989) Although the existence of some common markets for certain products in certain subcultures is evident, those who focus on cultural differences among consumers do not agree that the homogeneity of a youth market will necessarily create a homogeneous adult market. The "new wave youth" of today may not become the Pan-European consumers of future generations. Beatlemania was a global phenomenon for teens, as were the mini-skirt and jeans. However, as adults, tastes and preferences become more diverse and culturally based. (Anonymous, 1989)

Supporters of diversity also find flaws in the presumption that economies of scale will be realized with the benefits thereof being passed on to both producers and consumers. Empirical evidence that supports the economies of scale arguement has yet to be forthcoming. Even theoretically, the impact is questionnable. As firms reduce their costs of production, consumers should be faced with lower retail prices. (Geroski, 1989) The reduction in price should increase the quantity demanded for consumers who are already purchasing the product and increase the demand for the product from zero to some positive number for new consumers. In the case of new consumers, Geroski states that the increase in demand will only be marginal since price alone does not determine demand for a product. To insure the adoption of a new product a perceived need must be met. (Geroski, 1989) Hence, an analysis of the exogenous variables affecting product adoption might be more fruitful. Further, there is evidence based on diffusion theory that innovators and adopters of new products are more likely to have had some experience with similar goods and services within a product category, which may partially explain why some consumers are able to evaluate information relatvely quickly and easily. (Gatignon and Robertson, 1985) Pan-European brands within product categories may therefore be viewed as experience goods for consumers even though the particular product being sold is marketed as a new product. Hence, price reduction alone may not increase demand from zero to some positive number.

In the case of current consumers, the products are experience goods by definition, so little new information is necessary. For satisfied consumers, it may be the case that the price elasticity of demand is greater than [-1] so that a price reduction will lead to a measureable increase in quantity demanded. Further, the removal of trade barriers and tariffs, which also reduce the costs of production in addition to economies of scale benefits, will generate an increase in quantity demanded given the substitution effect of a price decrease. However, it is also possible that the removal of trade barriers will make some products available to consumers that were not available prior to 1992. Consumers will be better able to afford these additional products because of the income effect of the price reduction of goods they currently consume. Hence, the quantity demanded of goods currently consumed will decrease. If it is more likely that price reductions lead to an income effect rather than a substitution effect, consumers will purchase more of newly available goods and services rather than increase their demand for existing goods, reducing the impact of economies of scale.

Aware of the conflicting theories and evidence in the literature, producers and marketers are looking for a middle ground. Some support the idea of planning globally but marketing locally. (Anonymous, 1989). Others favor focussing on smaller market niches: unique clusters of consumers across the EC who have some commonality other than their nationality such as selected socio-economic and/or demographic characteristics. For example, clusters based on a combination of income, age, language and geographic location have been proposed. (Vandermerwe, 1989) Others support marketing products to predetermined subcultures of consumers across the EC: mass appeal for specialized interests. (Roberts, 1989) Alternatively, markets could be made more accessible rather than identical (Quelch and Buzzell, 1989), and slight variations primarily regarding packaging or labeling could remain diversified while keeping production technologies identical. (Cote, 1988a)

The Threat to Consumer Sovereignty

If consumers can benefit to some extent from economies of scale and expect to receive a higher quality, more standardized product at a lower price, it appears on the surface that a Pan-European approach can promote consumer welfare and should be applauded. However, consumer educators and consumer advocates should move cautiously. The expansion of markets across the EC poses a possible threat to the existence of consumer sovereignty.

By giving consumers adequate information, assuming rationale behavior, and relying on dollar votes to communicate wants, consumer rights can be supported and protected. One of the basic consumer rights that promotes sovereignty is freedom of choice. Consumer choice involves rationally making selections among a set of alternatives given resources, whereas consumer sovereignty would give consumers the ability and access to determine what the original alternatives are. (Rothenberg, 1962) One may question whether today's global market economy promotes choice or sovereignty. Some might argue that individual consumers face choices, however, in the aggregate, groups of consumers are sovereign. This is one of the assumptions made when equating the notion of consumer sovereignty with a free market economy. (Rothenberg, 1968) Since what any one individual consumer really wants is difficult to measure before purchases are made, post purchase behavior is usually analyzed to measure consumer demand. Hence, market demand rather than individual demand becomes the focus of consumer sovereignty issues. Consumers are not truly sovereign, but rather, their consumption behavior is related in some way to the behavior of others. As noted by Galbraith, consumers have no absolute choices. Rather, all of their choices are relative to what others have exposed them to. (Galbraith, 1958) Still others believe that consumers do not even have freedom of choice among alternatives given the restraints of economic resources, cultural influences, socialization and legal restrictions. (Hoyt, 1938)

Whether or not consumers are truly sovereign or they operate within a predetermined set of alternatives, the creation of a unified European Community may threaten the options currently available. Initially it appears that the removal of trade barriers will increase the availability of products in some areas which will expand consumer choice and promote sovereignty. Further, removal of barriers will increase the number of producers of similar products and promote competition, again supporting the idea of a sovereign market. Economies of scale arguements, in theory, are also quite convincing, as price reductions will increase consumer choice sets by expanding budget constraints. However, caution is needed. If Europe moves toward one homogeneous market in the interest of efficiency, there is a risk to that some aspects of consumer sovereignty might be lost.

First, the economic theory of the firm and its implications for economies of scale, as mentioned earlier, may have some flaws if we consider the possible income effect of reduced prices thereby reducing, rather than increasing, the demand for certain goods and services. This reduction in demand will prevent firms from achieving economies of scale, therefore, consumers will not benefit from the

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theorized price reduction. Second, even if the expansion of a choice set of goods and services is viewed to promote sovereignty across the EC, there is a threat to choice sets within individual countries of the EC. Standardization may remove culturally based products and even though the number of goods and services offered may increase, the characteristics of these products may be designed on a global rather than national level. If in fact, consumer sovereignty focuses on having consumers determine the alternatives from which to choose, globally determined characteristics will reduce consumer sovereignty because the alternatives are being determined outside of a particular nation. Third, standardization may reduce price but at the expense of choice as resources will be allocated in greater proportion to a more limited set of producers. Even those who rely heavily on the economies of scale arguements to justify expansion recognize that there will be some inequities due to the imposing of uniformity. (Geroski, 1989) Some of these inequities may involve loss of consumer choice if the resources that might have been allocated to produce culturally based goods and servcies are allocated to produce a larger quantity of standardized goods. Fourth, in contrast, for countries where the current offerings of products are sparce, an expanded EC market may increase choices. However, whether consumers will feel that they can freely choose to adopt these goods into their personal household budgets or they perceive that they will be expected to adopt them in order to exist in a new and changing enviornment is yet to be determined. The latter situation obviously will reduce freedom of choice and hence sovereignty. Fifth, an expanded EC market may eventually reduce consumer choice sets by reducing disposable income. Disposable income can be defined as income available for expenditures or savings after all fixed expenses are paid. As standards of living increase, fixed expenses tend to increase also. Goods and services that at one time may have been considered luxuries, may become necessities and part of household's fixed budget. A recent survey conducted by The Wall Street Journal polled a national random probability sample of adults regarding their opinions about certain products. Respondants were asked whether they thought a selected group of products were merely "modern frills" or whether they "made life better." In other words, have the products we once considered to be luxuries become part of our eveyday life and a fixed expense. Such products as home computers, coffee makers, and microwave ovens, once luxury items, were viewed as being necessities rather than frills. (Freedman, 1989) Similarly, telephones and automobiles, when first introduced, were considered luxuries. Over time, new technology quickly becomes indoctrinated into a society. The expansion of EC markets and the introduction of new goods and services, if quickly adopted, will eventually reduce disposable income unless incomes are increased proportionally.

Conclusion

The supply side of the market for goods and services may view the unification of the EC as a way of standardizing production technologies, expand market shares, compete with consumer markets in the US and Japan, and benefit from economies of scale. The demand side of the market could potentially benefit from improved quality, standardized products, increased availability of some goods and services, and reduced prices. However, some precautions to protect the interests of consumers within the various countries of the EC are necessary. This paper is not arguing against unification by any means. However, consumer economists should be concerned that most of the recent literature on the impact of EC 1992 is producer oriented, based on marketing research studies rather than consumer oriented, based on consumer behavior and/or attitude studies. Research is needed immediately to determine consumer views so that this new expanded market will give consumers due consideration. It is not just an issue of dollar votes. It may be an issue of cultural diversity, national pride, and preservation of custom versus quality control, pricing, standardization and choice.

References

Anonymous. (1989) The myth of the euro-consumer. The Economist, 313(7627), 79-80.

Beyma, R. (1989) Us, european retailers are becoming more transnational. Europe, 283, 20-22, 54.

Cote, K. (1988a) 1992:Europe becomes one. Advertising Age, 59(29), 46.

Cote, K. (1988b) European advertisers prepare for 1992. Europe, 279, 18-19.

Freedman, A. (1989) Most consumers shun luxuries, seek few frills but better service. The Wall Street Journal, September 19, B1,B6.

Galbraith, J.K. (1958) The affluent society. Boston, Mass: Houghton Mifflin Company.

Geroski, P. (1989) On diversity and scale-extant firms and extinct goods? Sloan Management Review, 31(1), 75-83.

Gatignon, H. and Robertson, T.S. (1985) A propositional inventory for new diffusion research. Journal of Consumer Research, 11, 849-867.

Hoyt E.E. (1938) Consumption in our society. New York: McGraw-Hill Book Company.

Martin, J. (1988) Beyond 1992: lifestyle is key. Advertising Age, 59(29), 57.

Parry, J. (1988) Marketers queue up to race through freer europe. Advertising Age, 59(44), S6, S8.

Quelch, J. & Buzzell, R.D. (1989) Marketing moves through ec crossroads. Sloan Management Review, 31(1), 63-74.

Roberts, J. (1989) Advertising the european way. Europe, 291, 30-32.

Robertson, T., Zielinski, J., and Ward, S. (1984) Consumer behavior. Glenview, Ill: Scott, Foresman and Company.

Rothenberg, J. (1968) Consumer sovereignty. In D. Sill (Ed.), International encyclopedia of the social sciences, 3, New York: MacMillian Company.

Vandermerwe, S. (1989) Strategies for a pan european market. Long Range Planning (UK), 22(3), 45-53.

Vandermerwe, S. & L'Huillier, M.A. (1989) Euro-consumers in 1992. Business Horizons, 32, 34-40.

Weiner, S. (1989) How do you say l'eggs in french? Forbes, 44(12), 73,76,79.

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The Involvement-Information Search Relationship Under High and Low Time Pressure

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Time pressures are widely felt in contemporary life and may, it has been suggested, create a distinctive context for decision-making. Separate regressions relating involvement antecedents to the use of seven nutrition information sources were estimated for time-pressed and not-time-pressed food preparers. Structural differences in the equations were examined. The results suggest that the time-pressed implement their food-related concerns differently from those who are not time-pressed.

Time pressures are widely felt in modern life. Studies by Robinson (1990a) indicate that a larger proportion of American adults feel time-pressed than a decade or two ago, despite evidence they have more leisure time (Robinson 1989). As modern consumers adapt to the time pressures of their environment, they appear to be creating what Gross has labeled "the time-scarce lifestyle" (1987). There is increasing recognition that consumer behavioral processes can differ with the environmental situation. Responses are contingent not only on the characteristics of the individual consumer but also on the situation in which the consumer is operating. This interactionist approach suggests that time pressure's conditional effects on information search and other decision-making processes should be part of the consumer research agenda.

Past studies of the effects of time pressure on information use (e.g., Wright 1974; Wright and Weitz 1977; Park, Iyer and Smith 1989 and Iyer 1989) have focused on the effects of temporary pressures on particular decisions and have found significant effects. There has, however, been no consideration of the effects of the persisting pressures of "the time-scarce lifestyle" on ongoing information search processes. This study examined one aspect of the information search process: the relationship of involvement to food and nutrition information search under high and low time pressure.

Involvement and Information Search

The definition and operationalization of involvement have been the subject of continuing controversy. In their review article on involvement Park and Mittal (1985) suggested that the concept be defined as the arousal capacity of some goal (object, issue or task). They argue the causes for this arousal may be utilitarian or value-expressive. Utilitarian causes or motives give rise to cognitive involvement and may include cost-benefits and functional performance factors. Value-expressive motives give rise to affective involvement and may include interest in enhancing self-esteem, projecting a desired image (Park and Mittal 1985) and personal enjoyment (Bloch 1981; Higie and Feick 1989).

One Dimension versus Several

The argument for multiple causes suggests that while involvement itself may be uni-dimensional, the underlying causes or motives for involvement are multi-dimensional. A small group of studies has linked multi-dimensional antecedents of involvement to behavioral outcomes including information search (Laurent and Kapferer 1985; McQuarrie and Munson 1987; Beatty and Smith 1987; and Higie and Feick 1989).

The variety of dimensions in these analyses seem confusing. There is, however, agreement that the antecedents of involvement are multidimensional. There also is agreement that the antecedents of involvement include both utilitarian causes (product importance, risk) and value-expressive causes (pleasure). Further, there is agreement that these antecedent dimensions play varying roles in influencing behavioral outcomes including information search activity.

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Enduring versus Situational Involvement

Several researchers have made a distinction between situational and enduring involvement (Bloch and Richins 1983). Situational involvement is considered to be the result of concern with a particular decision or purchase and to be of only temporary duration. In contrast, enduring involvement is a result of continuing concern and is expected to have an ongoing effect on behaviors. Much of the discussion of enduring involvement has focused on leisure and hobby activities. As a result, self-image and hedonic factors have received principal consideration. Economic consequences (e.g., on-going operating costs or expenditures), and health/safety risks (e.g., product use hazards) also seem likely concerns and antecedents of involvement. Laurent and Kapferer (1985) and McQuarrie and Munson (1987) both included risk variables in their analyses.

Prepurchase versus Ongoing Search

Many past studies of the relationship of involvement to information search have not clearly distinguished between the types of involvement motivating on-going information search and those motivating prepurchase search. Ongoing search would seem to be the result of enduring involvement while pre-purchase search activities may be due to enduring involvement, situational involvement or a combination of both. Laurent and Kapferer (1985) and McQuarrie and Munson (1987) both utilized questions suggesting enduring involvement.

Time Pressure and Its Effects

The effects of time limitations and time pressure on decision-making have been conceptualized and operationalized in a variety of ways. The operational definitions may be classified along several dimensions. Time limits or pressures may, be objective or subjective. Time pressures also may differ in scope and may be task specific or more general. Measures of role overload and the opportunity cost of time would seem to tap more general time pressures. Further, time pressures may differ in duration and may be temporary or chronic.

Time constraints have been found to have a direct effect on many aspects of the information search process: the extent of search (Beatty and Smith 1987), the sources used (Robinson 1990b; Feick, Herrmann and Warland 1986; Herrmann, Warland and Mothersbaugh 1989), the attribute information used (Wright 1974), and the outcomes of search (Park, Iyer and Smith 1989). Only one study, to our knowledge, has considered the effects of time pressure in a conditional sense. Iyer (1989) examined the effect of store knowledge on grocery purchase behavior under high and low time pressure.

Hypothesis Development

The work of Stigler (1961) and Becker (1976) has brought recognition in social science theory of time as a scarce resource and of its value. The time-pressed are especially aware of the costs of time devoted to decision-making and try to reduce it. One result is that the time-pressed (TP) are likely to be selective in exposing themselves to different information sources and selective in the information which they draw from them as compared to those who are not time pressed (NTP). One example of this selectivity is the lower use of television, a relatively time-intensive medium, by the time-pressed (Robinson 1977). This suggests the hypothesis:

H 1: The frequency of use of various information sources will differ between the TP and the NTP, with the TP tending to make less use of all sources, especially more time-intensive sources, such as television.

We have suggested above that risks such as economic risk and health risk are antecedents of involvement. There is evidence (Wright 1974; Wright and Weitz 1977) that under time pressure information about negative effects, i.e., information about risks, is weighted more heavily than is information about positive effects. This suggests the next hypothesis:

H 2: Involvement antecedents dealing with risks (i.e., negative consequences) will have a greater effect on search behavior among the TP than among the NTP.

Individuals under the time pressure can be expected to prioritize their activities. One basis for prioritizing will be involvement with a task, issue or object (product). If an activity or product is seen as satisfying value-expressive motives, it will receive more time and attention. The TP are likely to prioritize to a greater degree than the NTP. As a result, the search behavior of the TP is likely to vary more with the level of value-expressive involvement than does that of the NTP. This leads to the next hypothesis:

H 3: Involvement antecedents dealing with value-expressive motives will have a greater effect on search behavior among the TP than among the NTP.

The arguments for H2 and H3 suggest that the behavior of the TP varies more with the level of involvement than does that of the NTP. Thus, overall, the behavior of the TP seems to be more linked to involvement than does that of the NTP. This leads to a more general hypothesis:

H 4: The level of involvement (i.e., the level of the antecedents of involvement), will be more predictive of search activity among the TP than among the NTP.

Method

Data

The data were collected in telephone interviews with the principal meal preparers in the survey households. The data were obtained in telephone interviews conducted in Summer 1985 from a national sample stratified to the county level, using random digit dialing techniques. A total of 444 interviews were found to be usable for this analysis. As might be expected in a study of meal preparers, female respondents outnumbered males.

Frequency of Use of Information Sources

The dependent variables in the analysis were the frequency of use of seven different food information sources (see Table 1).

Time Pressure

The time pressure measure used was an objective one based on the characteristics of the meal preparer-respondents and their households. The characteristics utilized were ones associated with more frequent reports of feelings of time pressure in a study by Robinson (1990a):

Age (under age 45 or over)
Employment status (employed outside the home or not)
Household size (4+ persons or fewer)
Presence of children (children age 20 or under present or not).

Those who were younger, employed outside the home, from households of four or more and had children present were assigned dummy variable values of 1. The four variables were summed to create a time pressure index value for each respondent. The Cronbach's alpha for the index was .67.

Antecedents of Involvement

The review of recent analyses incorporating antecedents of involvement suggested that our analysis should include multiple antecedents of involvement with both utilitarian and value-expressive dimensions. A set of 19 questions dealing with various interests and concerns about food and nutrition was subjected to factor analysis to determine the number of dimensions underlying the responses. After

Table 1 - Mean Values for the Seven Information Sources

	Sample Mean	Time Pressure Categories-Means		t Test Statistic
		Low	High	
Asking Others about new food products and recipes	1.91	1.98	1.67	3.54[b]
Television programs on food and cooking	1.55	1.62	1.29	4.70[b]
Magazine Articles about recipes and food products	2.31	2.38	2.05	3.69[b]
Food Pages Articles about recipes and food products	2.20	2.29	1.88	4.33[b]
Pamphlets on food and recipes distributed at grocery stores	1.84	1.89	1.64	2.62[b]
Newspaper Food Ads	2.26	2.33	2.03	3.11[b]
Nutrition and ingredient Labels	2.14	2.18	1.99	1.94[b]

Scoring: 3 = Frequently; 2 = Sometimes; 1 = Seldom or Never

[b] $p \le .01$

orthogonal rotation, four distinct factors were identified: (1) concerns about the cost of food, (2) concerns about controlling food choices in order to obtain certain food constituents or nutrients and to avoid others, (3) interest in the use of foods for a variety of self-expressive purposes including social uses (e.g., as a gift, in entertaining) and in food preparation as a diversion or recreation, and (4) enjoyment of meal planning, food shopping and meal preparation. The factor scores on the four factors identified in this analysis were used as the independent variables in the regression analysis.

Analysis

A number of previous studies (Laurent and Kapferer 1985; McQuarrie and Munson 1987; Beatty and Smith 1987; Higie and Feick 1989) have assessed the relationship of involvement to behavioral outcomes by regressing the outcomes under study on the multiple antecedents of involvement which they identified. This study employed this approach.

Since it has been argued that time pressure creates a distinctive context for behavior, the model specified provided for the estimation of two separate sets of relationships representing the distinctly different processes occurring under higher and lower TP. Such a model permits the estimation of both separate level and slope coefficients.

The sample was split into TP (n=279) and NTP (n=165) categories using the index of time pressure. Respondents with index values of 0-1 were classified as NTP, while those with values of 2-4 were classified as TP. The estimation of separate regression equations for high and low time pressure involves the implicit assumption of a threshold effect - with time pressure's effects beginning to operate only after they reach a certain level. The threshold assumption is supported by a suggestion by Fisher (1988).

The four antecedents of involvement were regressed on information use in separate regressions for the NTP and the TP. Seven pairs of standardized beta coefficients were produced, as reported in Table 2.

Results

An overview of the results indicates that the four antecedents of involvement did contribute to the explanation in the use of the information sources. The adjusted R2 for the fourteen equations estimated ranged from .09 to .30, with a median value of 18.5.

The estimation of standardized beta coefficients permits us to assess the relative explanatory power of the four antecedent factors (Blalock 1979). The use of each of the seven information sources appears to be driven chiefly by one, or in some cases two principal concerns. The first five of the sources listed in Table 2 contain general information on recipes, food preparation and, less frequently, nutrition. Enjoyment and Self-Expression played key roles in explaining the use of these five general information sources. In the NTP regressions, Self-Expression played the principal role.

The two remaining sources studied contain more specialized information. Ingredient and nutrition labels contain a limited range of detailed information. Newspaper food ads, for their part, contain information on prices and availability, but little else. The use of food package label information was found to be driven chiefly by nutrition concerns. Use of food ads was found to be driven principally by economic concerns, as might be expected.

Let us turn to look more specifically at the evidence concerning the hypotheses guiding this study. The results suggest that time pressure does create a context in which information search is reduced. The mean usage of all seven sources was significantly lower among the TP than the NTP (Table 1). These results provide strong support for H1.

Examination of the adjusted R2 coefficients for the seven pairs of equations suggests that the involvement antecedents do provide more explanation of usage among the TP than among the NTP, as hypothesized. For six of the seven pairs of regressions, the adjusted R2 coefficients for the TP were larger than those for the NTP (food pages ads were the exception). This suggests that the information search activities of the TP are more closely linked to their priorities than those of the NTP. These results provide support for H4.

In order to determine whether the antecedents of involvement had a stronger effect among the TP than among the NTP the significance of differences in pairs of coefficients were determined with Z tests (Ko and Clogg 1989). The results of these tests are reported in Table 2. Twenty-eight tests were conducted comparing the

Table 2 - Standardized Beta Coefficients for the Antecedents of Involvement for the NTP and TP

		Nutritional Risk	Economic Risk	Enjoyment	Self-Expression	$\bar{R}^2$
Asking Others	NTP	$.16^{a}$	.10	.09	$.29^{b}$	.13
	TP	-.02	$.10^{a}$	$.37^{b}$	$.27^{b}$	.28
	Z^{c}	(-2.2)	(.2)	(3.0)	(.1)	
Television	NTP	$.24^{b}$	-.03	$.17^{a}$	.15	.09
	TP	$.17^{b}$	.10	$.31^{b}$	.07	.17
	Z^{c}	(-1.3)	(1.3)	(1.2)	(-.8)	
Magazine Articles	NTP	$.19^{b}$	.04	.14	$.34^{b}$	.18
	TP	$.15^{b}$	.07	$.37^{b}$	$.26^{b}$	.30
	Z^{c}	(-.8)	(.4)	(2.7)	(-.4)	
Food Pages Articles	NTP	.09	-.00	.08	$.38^{b}$	.15
	TP	$.12^{a}$	$.11^{a}$	$.32^{b}$	$.25^{b}$	.25
	Z^{c}	(.2)	(1.4)	(2.9)	(-.6)	
Pamphlets	NTP	$.18^{a}$	.08	$.24^{b}$	$.30^{b}$	.19
	TP	.04	$.18^{b}$	$.39^{b}$	$.17^{b}$	.26
	Z^{c}	(-1.8)	(1.3)	(1.7)	(-1.1)	
Newspaper Food Ads	NTP	$.22^{b}$	$.37^{b}$	$.16^{a}$	.13	.22
	TP	.04	$.34^{b}$	$.19^{b}$	.07	.17
	Z^{c}	(-2.3)	(.4)	(.5)	(-.3)	
Food Labels	NTP	$.31^{b}$	$.16^{a}$	.05	$.24^{b}$	.18
	TP	$.48^{b}$	.07	.04	.03	.24
	Z^{c}	(1.0)	(-.9)	(-.1)	(-2.0)	

Scoring: 3 = Frequently; 2 = Sometimes; 1 = Seldom or Never

[a] $p \leq .05$ [b] $p \leq .01$

[c] Z statistics for comparison of pairs of regression coefficients are presented in brackets. The statistics are based on $Z = \hat{B}_{TP} - \hat{B}_{NTP} / S(\hat{B}_{TP} - \hat{B}_{NTP})$. Values greater than 2.0 can be considered significant.

unstandardized regression coefficients, and significant differences were found in six coefficient pairs. The relative magnitude of the coefficients in these cases was not, however, always as hypothesized. On the basis of H2 and H3 it was expected that the coefficients in the TP regressions would be larger than those for the NTP. The coefficients for the TP were significantly larger in three instances and smaller in three others. These results did not provide support for hypotheses H2 and H3.

An alternative approach to testing H2 and H3 is to focus on the largest standardized betas, i.e. those with the greatest explanatory power. Focusing on these coefficients will put emphasis on the key explanatory elements. We could, for example, focus on the largest beta in each NTP equation and compare it to the corresponding coefficient in the TP equation. We then could reverse the process and compare the largest beta in each of the TP equations to the corresponding beta in the NTP equations.

A total of 12 comparisons was required to do this. For example, in the regression for Asking Others estimated for the NTP, the coefficient for Self-Expression is the largest. This coefficient does not differ significantly from that for the TP, however. In the same pair of regressions, Enjoyment has the largest beta for the TP regression. This coefficient is significantly larger than that for the NTP, as hypothesized. Overall, in the 12 comparisons, the TP coefficient was significantly greater in three instances. In all three of these cases, the Enjoyment coefficient for the TP is significantly greater than that for the NTP. These results provide weak support for H3. There is no evidence to support H2.

Discussion

The general pattern of the results is similar to that in earlier studies which regressed information search activities on the antecedents of involvement. The adjusted R2s obtained for this study were similar to those obtained by Laurent and Kapferer (1985) for the use of articles and TV programs and for looking at advertising and by Beatty and Smith (1987) for media search and for interpersonal search. The results also resembled the earlier studies in that the regressions were dominated by one or sometimes two principal variables, chiefly pleasure (Laurent and Kapferer 1985; McQuarrie and Munson 1987).

Risk-related variables thus failed to play a strong role in explaining information search in this study. These results are similar to those in the two previous studies which resembled this one in their product orientation (Laurent and Kapferer 1985; McQuarrie and Munson 1987).

In examining the results we can note several distinct patterns. Among the TP, the use of the five general information sources studied (asking others, television, magazine articles, food pages articles and pamphlets) is driven principally by Enjoyment. In all five instances the effects of Enjoyment were greater among the TP than among the NTP, and in three instances these differences were statistically significant. Among the NTP, the use of these five sources was driven principally by Self-Expression. Its effects were larger for the NTP than the TP. The differences were not, however, significant. The expected differences between the TP and NTP did not appear for the use of food labels or for the use of newspaper food ads. For both these highly specialized sources of information the principal variables operating were as expected (Economic Risk and Nutritional Risk), but the differences in coefficients between the TP and NTP were not significant.

The results indicate that time pressure has the effect of structuring behavior by making the relationship between involvement and search more consistent, in some instances.

The results have several implications for consumer information and education policy. As time pressures in our society continue to increase, as seems likely, their effects on consumer information search are likely to continue to worsen. The results of this study suggest that use of simple, easy-to-use sources such as labels can be encouraged by emphasis on cognitive (i.e., risk) factors. Use of more general and demanding information sources appears, however, to depend on value-expressive factors.

Overall, the results suggest that the time-pressed implement their interests and concerns differently from those who are not time-pressed, in some instances. The methods they develop to cope with on-going time pressures may well constitute a distinctive lifestyle, one which merits more attention from consumer researchers than it has received.

References

Beatty, S.E. & Smith, S.M. (1987) External search effort: An investigation across several product categories. Journal of Consumer Research, 14(June), 83-95.

Becker, G.M. (1976) The economic approach to human behavior. Chicago: University of Chicago Press, 89-114.

Blalock, Jr., H.M. (1979) Social statistics. (rev. 2nd ed.), New York: McGraw-Hill, 477-482.

Bloch, P.H. (1981) An exploration into the scaling of consumers' involvement with a product class. In K. B. Monroe (Ed.), Advances in Consumer Research, (Vol. 8), Ann Arbor, MI: Association for Consumer Research, 61-65.

Bloch, P.H. & Richins, M.L. (1983) A theoretical model for the study of product importance perceptions. Journal of Marketing, 47(Summer), 69-81.

Feick, L.F., Herrmann, R.O. & Warland, R.H. (1986) Search for nutrition information: A probit analysis of the use of different information sources. Journal of Consumer Affairs, 20(Winter), 173-192.

Fisher, G.A. (1988) Problems in the use and interpretation of product variables. In J.S. Long (Ed.), Common Problems / Proper Solutions, Beverly Hills, CA: Sage, 84-107.

Gross, B.L. & Sheth, J.N. (1989) Time-oriented advertising: A content analysis of United States magazine advertising, 1890-1988. Journal of Marketing, 53(October), 76-83.

Herrmann, R.O., Warland, R. & Mothersbaugh, D. (1989) Patterns in the acquisition of food information. In M. Carsky (Ed.), Proceedings of 35th Annual Conference, Columbia, MO: American Council on Consumer Interests, 80-86.

Higie, R.A. & Feick, L.F. (1989) Enduring involvement: Conceptual and measurement issues. In T.K. Srull (Ed.), Advances in Consumer Research, Vol. 16, Provo, UT: Association for Consumer Research, 690-696.

Iyer, E.S. (1989) Unplanned purchasing: Knowledge of shopping environment and time pressure. Journal of Retailing, 65(Spring), 40-57.

Kapferer, J. & Laurent, G. (1985) Consumer involvement profiles: A new practical approach to consumer involvement. Journal of Advertising Research, 25(December-January), 48-56.

Ko, G.K. & Clogg, C.C. (1989) Earnings differentials between Chinese and whites in 1980: Subgroup variablility and evidence for convergence. Social Science Research, 18(September), 249-270.

Laurent, G. & Kapferer, J. (1985) Measuring consumer involvement profiles. (1985), Journal of Marketing Research, 22(February), 41-53.

McQuarrie, E.F. & Munson J.M. (1987) The Zaichkowsky personal involvement inventory: Modification and extension. In M. Wallendorf & P. Anderson (Eds.), Advances in Consumer Research, Vol. 14, Provo, UT: Association for Consumer Research, 36-40.

Park, C.W. & Mittal, B. (1985) A theory of involvement in consumer behavior: Problems and issues. In J.N. Sheth (Ed.), Research in Consumer Behavior, Vol. 1, Greenwich, CN: JAI Press, 201-231.

Park, C.W., Iyer, E.S. & Smith, D.C. (1989) The effects of situational factors on in-store grocery shopping behavior: The role of store environment and time available for shopping. Journal of Consumer Research, 15(March), 422-433.

Robinson, J.P. (1977) How Americans use time: A social-psychological analysis of everyday behavior, New York: Praeger.

Robinson, J.P. (1989) Time's up. American Demographics, 11(July), 33-35.

Robinson, J.P. (1990a) Time squeeze. American Demographics, 12(February), 30-35.

Robinson, J.P. (1990b) Thanks for reading this. American Demographics, 12(May), 6-7.

Stigler, G.J. (1961) The economics of information. Journal of Political Economy, 69(June), 213-225.

Wright, P. (1974) The harassed decision maker: Time pressures, distractions, and the use of evidence. Journal of Applied Psychology, 59(October), 555-561.

Wright, P. & Weitz, B. (1977) Time horizon effects on product evaluation strategies. Journal of Marketing Research, 14(November), 429-443.

Do Printed Advertisements in Children's Magazines Comply With Guidelines of the Children's Advertising Review Unit? An Exploratory Study

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Only a small amount of research has investigated printed advertisements directed at children under the age of twelve. This pilot study tested the compliance of printed advertisements in a selected group of children's magazines with the CARU guidelines. Problems were identified in the areas of disclosures, endorsements and premiums.

During the past two decades children have begun to be viewed as three separate consumer markets: a current one, an influential one and a future market. (McNeal, 1990; Stipp, 1988) As advertisers and marketers have realized the importance of the relationship between children and the marketplace, more of their marketing effort has been aimed directly at the child audience. (Selling America's Kids, Commerical Pressures on Kids for the 90's, 1990).

While an extensive variety of research studies has focused on children and advertising, the vast majority of the studies has investigated some facet of television advertising. (Adler, 1980; McNeal, 1987;) This emphasis may be understandable given the heavy exposure of children to television advertisements, estimates are that children view approximately 30,000 advertisements per year on television, an average of 55 commercials each day. (Selling American's Kids, Commercial Pressures on Kids for the 90's, 1990 However, little is known of the nature of advertisements to which children are exposed in the print media. For children ages 13 and under, there are an estimated 92 magazines published and in one year alone, seven new magazines were initiated just for preschoolers. (Cleaver, 1986) According to Koback (1990) a typical U.S. household received 5.9 different magazines in 1988 with a total of 125 copies of those magazines during the year. However, he suggested that the field of magazines focusing on infants and children has declined with 34 magazines now available for children with a total estimated circulation of 9.2 million.

The Children's Television Advertising Guidelines were developed in 1972 by the Association of National Advertisers to encourage accurate and truthful advertising to children. (Self Regulatory Guidelines for Children's Advertising, 1983) Following the establishment of the Children's Advertising Review Unit (CARU) in 1974 by the Council of Better Business Bureau's National Advertising Division, the guidelines were edited, republished and renamed as Self Regulatory Guidelines for Children's Advertising. Subsequently the guidelines have been revised twice. The goal of the CARU is to promote truthful, accurate advertising to children which is sensitive to the special nature of the child audience. The guidelines are intended to help advertisers deal honestly with children, without depriving the advertisers of the benefits of innovative advertising approaches.

Five broad principles provide the basis for the guidelines. The first two principles stipulate that advertisers should consider the level of knowledge, sophistication, and maturity of the child audience and not exploit the imaginative qualities of children. The third one requires that product information contained in an advertisement should be communicated in a truthful and accurate manner. A fourth principle requires advertisers to use the potential advertising has to influence social behavior, and develop advertisements that address positive and beneficial social standards. Lastly, advertisements should contribute to the parent child relation in a positive manner.

From these five principles a set of more detailed guidelines was developed under the following seven headings: product presentation and claims; sales pressure; disclosures and disclaimers;

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comparative claims; endorsements and promotions by program or editorial characters; premiums and safety. These guidelines apply to all advertising addressed to children under twelve years of age, including print, broadcast and cable television advertising.

Between 1974 and 1982, the CARU staff investigated 154 cases with the majority of those cases involving television advertisements (62.6%). Comic book advertisements accounted for another quarter of the cases (25.2%) with only ten percent from other print media. Some aspect of product presentation was the major violation in a significant majority of the cases (67.4%). In only one case did a violation of the comparative claim guideline occur and in two cases the violations were related to claim substantiation. In only three advertisements were there violations related to promotion by a character or a personal endorsement and violations of premium advertising occurred in seven cases. (Armstrong, 1984)

The purposes of this exploratory study were threefold: the first was to test the use of an instrument based on the CARU guidelines; and the second, to determine if the advertisements found in children's magazines and comic books available on newsstands in the spring of 1990 complied with the CARU guidelines. The third purpose was to analyze the following: the type of product; the settings in the advertisements; the type of spokesperson most often used; the size of the advertisements and the frequency of coupons or discounts in the advertisements.

Sample

Eleven children's magazines and three comic books were chosen from local retail outlets in early 1990. To be selected, the magazine had to be written for children age twelve or under and contain advertisements. Publications which did not contain advertisements or were available only by subscription were not considered for this study. The publications selected were: Alf, Barbie, Duck Tales, G.I. Joe, Ghostbusters, Gobots, Mickey Mouse, Muppets, Robocop (comic book), She-Ra Princess of Power, Snoopy, Sports Illustrated for Kids, Superman (comic book), and Teenage Mutant Ninja Turtles (comic book). One hundred forty-two advertisements were available from these sources for analysis.

Method

The CARU guidelines were converted into an instrument by the authors. There were a total of eight categories with the five broad principles grouped under a category entitled, "general". Each CARU guideline was written as a separate item. The items were then organized by the major categories of the CARU guidelines with the five broad principles grouped under a category, "General". A five point scale of the Likert type was used. Items were worded so that compliance with the guidelines yielded the highest number of points. Not applicable (NA) was marked if the item did not apply to the particular advertisement.

Each advertisement was analyzed with points assigned to a choice as follows: Strongly Agree (5) points; Agree (4) points; Neutral (3) points; Disagree (2) points and Strongly Disagree (1) point. No points were assigned for Not Applicable. Percentages were calculated for the responses for each guideline. Following the initial analysis the categories of choices were combined because there were reported difficulties in distinguishing between the extremes of "strongly agree" and "agree" and "strongly disagree" and "disagree". The concept of "neutral" meant that the copy of the advertisement did not contain substantive or affirmative language which met the guideline nor did it contain language which substantiated a clear violation of the guideline. The response of "agree" meant that the advertising copy contained specific and/or affirmative language which met the guidelines while "disagree" meant the lack of specific and/or affirmative language.

Results

General

The first set of items was applicable to all 142 advertisements in the sample. Only about one third of the advertisements (34.5%) were in compliance with the first item that the level of knowledge, sophistication, and maturity of the intended audience had been considered. There appeared to be greater compliance with the next two items: 62.7 percent of the advertisements did not exploit the imaginative quality of the child reader and 64.1 percent of the advertisements did not stimulate either directly or indirectly unreasonable expectations of product quality. Almost half of the advertisements (47.9%) met the item of communicating product information in a truthful and accurate manner. Less positive assessments were given however, for the compliance with the last two items in this section. Using advertising to realize the potential to influence social behavior through positive and beneficial social standards occurred in only a small percent of the advertisements (12.5%) and a much smaller percent (4.2%) were deemed to focus on the parent-child relationship in a positive and constructive manner.

Product Presentation

The focus of the second category of the CARU guidelines is on the advertisement not being misleading about product or performance characteristics or perceived benefits from the use of the product. All 142 advertisements were analyzed using this category of items. Slightly over half (56.3%) of the advertisements complied with the first item that the visual presentation was not misleading about the product nor performance characteristics. A higher percent of the advertisements (72.5%) were considered as not misleading children about perceived benefits from the use of the product. Almost two thirds (63.4%) of the advertisements, did not exploit the imagination of children. The performance and use of the product could be duplicated by the child for whom the product was intended (61.3%) and the product was shown in a safe environment. (88%) Less than one-third of the advertisements complied with the item requiring that what is included and excluded in the initial purchase be clearly disclosed. Only one question from this category concerned food products and 19 (13.4%) advertisements were for food or beverage products. Slightly better than a quarter (26.3%) of the food advertisements complied with the item which requires that representations of food products should be made so as to encourage sound usage of the product with a view toward healthy development of the child and development of good nutritional practices.

Over eighty-three percent of the advertisements were not presented in a manner which would frighten children or provoke anxiety. The advertisements did not comply as favorably with the last item which requires that objective claims about product or performance characteristics be supported by appropriate and adequate substantiation as 63.2% were considered neutral.

Sales Pressure

Sales pressure was the focus of the third category of items. Over two-thirds of the advertisements complied with the first two items. Children were not being urged to engage in product request behavior nor was the impression conveyed that possession of the product would result in greater peer acceptance. For the third item on clear price representation, 59.6 percent of the responses were judged as being in compliance.

Disclosures/Disclaimers

Forty-six of the advertisements contained some form of a disclosure or disclaimer. The first item requires that any disclosures or disclaimers be expressed in language understandable by child audiences. Over half (56.5%) of the 46 advertisements did not comply with this requirement. The second item which requires a clear statement that the unassembled product must be put together to be used properly was applicable to only four advertisements. Half of those advertisements were in compliance with this item while one was deemed to not be in compliance and the other was questionable.

The third item requires that there be a clear disclosure that an item essential to the use of the product, for example batteries, is not included in the product. However, 94.2% of the 34 advertisements analyzed did not comply with the item. Similarly, there was poor compliance with the fourth item which requires clear disclosure that additional accessories for the product must be purchased separately as 94.3% of the advertisements did not comply.

Comparative Claims

Only three advertisements contained comparative claims. None of the advertisements complied with the first item which requires that the comparative advertisement provide factual information. For the item which requires that comparative claims be presented in a way that a child can clearly understand, one advertisement was rated as neutral while two advertisements did not comply. None of the advertisements complied with the third item requiring appropriate and adequate substantiation of comparative claims.

Endorsements

Fifteen advertisements (10.6%) contained endorsements or promotion of a product by program or editorial characters. In the majority of these advertisements (86.6%) the endorsement was by a fantasy/cartoon character such as Snoopy or Mickey Mouse. Since these endorsers are fantasy creations the first item which requires that all personal endorsements reflect the actual experiences and beliefs of the endorser is not applicable. For the two advertisements which did include people celebrities, one advertisement was in compliance and one was not. Similarly, the second item requires that the endorser represent, either directly or indirectly, the qualifications appropriate to the particular expertise depicted in the endorsement. Fantasy or cartoon characters do not have qualifications or areas of expertise. For the two advertisements containing the celebrity endorsements, one was deemed in compliance and one was considered neutral. The third item which deals with host-selling requires that program personalities (live or animated) do not promote products, premiums or services in or adjacent to programs primarily directed to children in which the same personality or character appears is not applicable to printed advertisements. However, the fourth item essentially duplicates the third item only for print media. This item specifies that a character or personality associated with the editorial content of the publciation has not been used to promote products, premiums or services in the same publication. All fifteen advertisements were analyzed and eighty percent did not comply. It appears that too much host-selling is being used to promote products in these children's magazines.

Premiums

Premiums were offered in seventeen (11.9%) advertisements. Two items relate directly to premiums. The first requires that care be taken to focus the child's attention primarily on the product. In slightly less than a quarter of the advertisements (23.5%), this occurred. In 41% of the advertisements, however, the focus was on the premium not on the product. A second requirement is that the conditions of a premium offer must be stated simply and clearly, a majority of the advertisements (52.9%) did not comply with the item.

Safety

The final category of items deals with safety issues. All of the advertisements were analyzed by the five items contained in this section. Better than two-thirds (69%) of these advertisements complied with the first item which requires that the product be an appropriate one to advertise directly to children. The second item which requires that the children shown using the product be in the appropriate age range was applicable to only 32 advertisements where children were used as spokespersons. More than three quarters (81.2) of these 32 advertisements were deemed in compliance. For the third item, which deals with products involving an obvious safety risk and adults shown as supervising the children, only four advertisements were appropriate. Three of the four advertisements did not comply with this item and one was neutral. Over eighty-five percent of the advertisements were considered in compliance with the item requiring that there be no portrayal of adults or children in unsafe acts, situations or conditions or in acts harmful to others. Similarly an even greater percent of the advertisements (92.3%) was deemed in compliance with the last item which requires that the advertisement avoid demonstrations which encourage dangerous or inappropriate use or misuse of the product.

Advertisements

In the fourteen magazines used in this study, the most common types of products advertised were: books and magazines, 28 advertisements (19.7%); toys, 22 advertisements (15.5%); foods and beverages, 16 advertisements (11.3%); with a miscellaneous grouping of 21 advertisements (14.8%). The most common type of setting in the advertisements was a photograph of a real product or person, 63 advertisements (46.5%). Cartoons with a fantasy orientation were used in 51 advertisements (35.2%). A significant majority of the advertisements were full-page (83.1%) with coupons or discounts present in only 15 advertisements (10.6%). A spokesperson was used in half of the advertisements (51.4%) with cartoon or fantasy characters being the most common type, 38 advertisements (26.1%). Children were portrayed in 26 advertisements (19.7%) with male children (39.3%) being more common than female children (28.6%). Three advertisements contained adults only and another three contained adults with children.

Conclusions

An instrument derived from the CARU guidelines does provide a means of assessing the compliance of printed advertisements in children's magazines with those guidelines. A Likert scale with three measures did prove useful although assessing some advertisements as "neutral", leaves doubt as to the advertiser's actual compliance.

In the first General Category, the greatest compliance was with the items of care being taken not to exploit the imaginative quality of children and not stimulating unreasonable expectations of product quality or performance. However, the advertisements did not contain copy which influenced positive social behavior and contributed to the parent-child relationship in a constructive manner.

For the Product Presentation Category, a majority of the advertisements complied with seven of the ten items. For three items, the response of neutral occurred the most frequently; what is included and what is excluded in the initial purchase; objective, substantiated claims about the product; and representations of food products to encourage good nutrition.

In the Safety Category, there was high compliance for four of the five items. Only four of the advertisements involved a product with a obvious safety risk. However, three of the advertisements for such products did not comply with the appropriate item.

Only a small number of the advertisements included in these children's magazines contained comparative claims. While the items require that such claims be adequately supported, clearly presented and provide factual information, none of the three advertisements complied. It appears that advertisers could greatly improve this type of advertisement. Premium offers in advertisements were a second area where there were few advertisements and compliance was low. In only 23.5% of these advertisements was the focus on the product as the CARU guidelines required. Similarly, as with disclosures/disclaimers, the premium conditions were not expressed in language easily understood by the child reader.

The highest number of violations occurred in the category of disclosures/disclaimers. While it is encouraging that some of the advertisements did make necessary disclosures/disclaimers, it appears that more advertisements should include disclosures or disclaimers. For example, in the Product Presentation Category, 72.5% of the advertisements were classified as "neutral" or "disagree" for the item requiring clear establishment of what is included or excluded in this initial purchase, nor were the disclosures/disclaimers expressed in vocabulary that children would understand. Further the advertisements failed to disclose the most crucial information such as assembly required or accessories must be purchased separately.

A second area needing improvement is endorsements by program or editorial characters. It may be that a change in the CARU guidelines is necessary since a significant number of the endorsements were by fantasy/cartoon characters and the guidelines simply were not appropriate in those cases. Additionally, in a significant number of the advertisements the characters related to the editorial content of the publications were used as the endorsers. Thus, the question is raised whether these publications are truly children's magazines or simply cleverly done advertisements for the products with a little additional copy.

Extensive research has been conducted for many facets of television advertising directed toward the child. Far less research has been conducted on printed advertisements aimed at children. This pilot study explored the use of an instrument based upon the CARU guidelines. Areas of improvement for the guidelines have been noted. Additional research should be done to validate the instrument and assess the perceptions of other adult groups.

References

Adler, Richard. (1980). The effects of television advertising on children. Lexington, Mass: Lexington Books.

Armstrong, Gary M. (1984). "An evaluation of the children's advertising review unit." Journal of Public Policy and Marketing, 3:38-55.

Cleaver, Joanny Y. (1986). "Magazines: rise of the dual income makes kids a hot target." Advertising Age 57, (November 10): 54.

Hoy, M.G., C.E. Young, & J.C. Mowen. (1986). "Animated host-selling advertisements: Their impact on young children's recognition, attitudes, and behavior." Journal of Public Policy and Marketing, 5: 71-184.

Kobak, James B. (1990). "Twenty-five years of change: What's been happening in the consumer magazine industry? Emerging trends may come as a surprise." Folio, 19 (March 19): 82-89.

Liebert, Diane E., Joyce N., Sprafkin, Robert M. Liebert, & Elia A. Rubenstein. (1977). "Effects of television commercial disclaimers on the product expectations of children." Journal of Communication, 27(1): 118-124.

McNeal, James U. (1990). "Children as customers." American Demographics, (September): 36-39.

Miller, J.R., Jr. & P. Bush. (1979). "Host-selling vs. premium tv commercials: An experimental evaluation of their influence on children." Journal of Marketing Research, 16: 323-32.

Murray, John P. (1980). Television and youth: 25 years of research and controversy. Boys Town Center for the Study of Youth Development, Nebraska.

Raju, P.S. & S. Lonial. (1990). "Advertising to children: Findings and implications." Current Issues & Research in Advertising. James H. Leigh & Claude R. Martin, Jr. (Eds.). Ann Arbor, Michigan: Division of Research, School of Business Administration.

Reeves, Byran & Bradley S. Greenberg. (1977). "Children's perceptions of television characters." Human Communication Research, 3(2): 113-127.

Selling America's kids, commercial pressures on kids of the 90's. (1990). Prepared for Zillions: Consumer Reports for Kids, Consumers Union Education Services, New York, New York.

Self-regulatory guidelines for children's advertising, 3rd ed. (1983). Children's Advertising Review Unit, National Advertising Division, Council of Better Business Bureaus, Inc.

Shimp, Terence, Robert F. Dyer, & Salvatore F. Divita. (1976). "An experimental test of the harmful effects of premium-oriented commercials on children." Journal of Consumer Research, 3(1): 1-11.

Soldow, Gary F. (1983). "The processing of information in the young consumer: The impact of cognitive development state on television, radio, & print advertising. Journal of Advertising, 12(3): 4-14.

Stipp, Horts H. (1988). "Children as consumers." American Demographics, (February): 27-32.

A Normative Shopping System

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A normative shopping system is introduced that takes advantage of the behavior of business elements in the marketplace. Search is an ongoing process designed to benefit from price differences of retailers at one point in time and over time. An acceptable set of brand, stores, and prices are determined a priori. Purchase is triggered by a low price. The ramifications of the system are discussed.

Consumer education has historically focused on teaching individuals to make *rational* marketplace decisions. It has rested heavily on the premise that if consumers would follow the *rational* model--problem recognition, information search, evaluate alternatives simultaneously, and then make a purchase decision based on quasi-optimal information, they would achieve higher levels of satisfaction with marketplace transactions, and *maximize* their economic utility. However, in spite of more than fifty years of consumer eduction, purchasing by households has not changed significantly from what it was in 1912 when Wesley Mitchell wrote "The Backward Art of Spending Money." In fact, different literatures are replete with evidence that consumers do not use thoughtful decision processes. There is also evidence that consumers are buying more on impulse today than at any time in the past (Schlossberg 1990).

This current failure of consumers to follow planned processes may be attributed to changes in the nature and structure of the shopping environment such as increased product alternatives, high tech products; it might also be attributed to changes in the household. Dual earner couples are short the time to manage the day-to-day operation of the household and raising the children, much have less time for shopping activities. Moreover households requiring two earners to meet expenses have an excuse for not obtaining the best value for their shopping dollar. They chalk off the higher prices paid to the fact that they do not have the time to deliberate each decision.

This paper proposes a shopping system that would benefit most households in aiding them to increase their purchasing power. The system is flexible with respect to the desired level of shopping effort and makes no claim to optimality, often the goal of normative decision strategies.

Background

Individuals and households might approach shopping in numerous ways depending upon variables such as the type of goods sought, knowledge of or interest in product category, and attitudes toward the activity itself. Over time "rules of thumb," or heuristics have been integrated into our decision processes that enable us to shorten the search process. Thus, consumers might buy convenience or the lowest price (Cude 1989) and conversely "always buy top of the line" when considering durable goods (Maynes 1976). Consumers who dislike shopping or lack knowledge may delegate the "choice" or decision to someone else (Olshavsky 1988), to an *information seeker* or other opinion leader or rely fully on the advice of a person or group that is socially important (Thorelli and Sentell 1982). They may also follow recommendations of friends, sales people, a product testing organization or some combination of such, or they may simply imitate the purchase behavior of those who they believe to be acting "optimally" (Olshavsky 1988). In particular instances some of the above behaviors may be "optimal" and would, therefore, limit the necessity and usefulness of extended search.

In many contexts consumers seeking a "best" decision may feel that optimization is an illusion, and hence engage in some form of satisficing behavior without an attempt to optimize (Simon 1957). Some observers feel that there is a "flat" optimum so that the search is for broad ranges rather than single points of optimality (Edwards 1984).

Optimization with respect to consumer decisions has been investigated using the concepts of consumer efficiency, decision qualities, and choice accuracies (Sproles 1983). According to Sproles, an efficient consumer is seen as one who *correctly* identifies and chooses the relative qualities of a feasible set of alternative choices given the relevant constraints. The attention of the optimizing consumer is focused on making the best single purchase at one point in time. Decision quality and choice accuracy are synonymous. These are conceptualized as the degree to which the actual choice of an item by a person approaches the a priori subjectively determined ideal choice of that person (Sproles, Geistfeld and Badenhop 1980). The consumer determines his/her standards or aspirations and then attempts to choose the item which is subjectively closest to those standards.

Buyer Behavior Theory

Theory on consumer buying behavior is derived largely from economics which has devised some normative concepts of "economic man" and his/her rational behavior. Some basic assumptions about behavior are that more of a good should be preferred to less, lower

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prices to higher prices, and higher quality to lower quality. The environmental assumptions of economics specify that buyers possess perfect information about products and prices, that they are certain of their own stable tastes and preferences, and that they are capable of perfectly processing information. And, finally, that they are able to express preferences between goods and bundles of goods without cost (Schwartz 1986). The framework for the consumer decision process is based on these assumptions and on the further assumptions endemic to the *economic man* who engages in an orderly process in consideration of goods for their primary function.

Perspectives of Consumer Educators

The economic principles and model of rational decision making have formed the backbone of consumer education. The recommendations of the educators are largely concentrated on teaching the consumer to formalize decision making (Deacon and Firebaugh 1989), to engage in search until it is no longer profitable, and to reap consumer surplus either by buying a higher quality product for the same price, or the same level of quality for a lower price (Maynes 1976:7).

Consumer educators recommendations include some general guidelines as well suggestions for specific situations. For example, processing by attributes (comparison of brands one attribute at a time) rather than by brands (comparison of brands one attribute at a time) is recommended as the former is more efficient; however, the comparisons should be simultaneous (Sproles, et al. 1978). Garman (1991) has portrayed the do's and don'ts of purchasing as have Herrmann, Tsai, and Warland (1988) in delineating nine food buying practices[1].

Writers are in general against impulse and emotional buying. Careful analysis, thought and planning is favored. Price and quality are key considerations with the recommendation being that the consumer should use a marginal rule starting with the lowest quality specimen As s/he moves up on quality the consumer asks "is the improvement in quality worth the increased cost?" (Maynes 1976:66).

Many of the suggested rules are designed to impose discipline on the shopper to minimize the extent to which the business system can take advantage of these consumers. Consumer educators and consumer economists generally distrust the behavior and motives of firms and business executives (Garman 1991; Mayer 1990).[2] The consumer is often seen as in revolt against the hostile environment in which they operate. The emphasis is frequently on pointing to the failures of the system (see, for example, Uhl (1982) on couponing; Garman (1991) on advertising, as well as Cude (1988b) and Maynes and Assum (1982) on price dispersion as a manifestation of the inefficiency of the system), rather than on teaching consumers to "honestly" compete against parts of the marketing system. Consumers who are unaware of the marketplace competition are at a distinct disadvantage.

Environmental and Consumer Factors

Consumer economists and consumer educators fail to account for marketing mechanisms and to develop an understanding in students of how the market is structured, how it works, and how to take advantage of its highly competitive operation. This was not always the case. Margaret Reid and Jessie V. Coles, in their 1938 Consumer and the Market textbooks allocated ample space to market structure and marketing mechanisms. Coles (1938) allocated 52 pages to the consumer interest, 150 pages to understanding the market from manufacturer to the costs of marketing, and 100 pages to understanding retailing institution. Reid stated that "consumers often fail to appreciate the highly complex nature of the productive process which influences prices and the kind and quality of goods offered.... it is necessary to go behind the retailer....to perceive the complete functioning of the market system and to understand policies and practice that affect consumer interests (Reid 1938:viii). Two considerations, price variations at one point in time and price variations over time are central to our shopping system and also relate to the lack of realism of the assumptions of much economic theory.

Price Variation at One Point in Time

Research shows that prices differ among retail outlets at one point in time (Cude 1987; Eastwood 1988; Maynes 1989). Numerous studies in specific product areas have observed dramatic price differences at one point in time. For example, Kirby and Dardis (1986) suggest that merchandise purchased in department stores cost the consumer 40 percent more than the same merchandise purchased in off-price stores. Hawkins and McCain (1979) found substantial price differences for products such as cameras, blenders, televisions, and freezers.

Price Variation Over Time

Those studying consumer behavior are conscious of the importance of elements of time (Becker 1965, Linder 1970). There is substantial evidence that households can save a significant percent of their purchase dollar by time oriented shopping strategies. For instance, Kirby and Dardis (1986) found that over a 13 week period, average prices in department stores for 20 items decreased from $81.18 to $67.01. Seasonal variation in supermarket prices as well as traditional sales (e.g. January White Sales) have been noted by consumer education textbook authors.

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[1] It is interesting to note that virtually all consumer educators/economists recommend "making a list before grocery shopping.... and not deviating from the list." As early as 1986, it was reported that only 19.3% of shoppers rely on a list (Marketing News, 1986).

[2] Many marketing people believe that firms that do not organize to satisfy consumers are acting against their own interest (Engel 1970).

Substantial price differentials over time may be created by legitimate sales and clearances; loss leaders in retail advertising; couponing; extra value couponing such as double couponing (Bhasin and Dickinson, 1987); promotional activities of retail and the supplier for store openings; blue-light specials of Kmart and the red-light specials of Wal-Mart; and important changes in supplier cost, e.g. for seasonal variations. Furthermore there is evidence that fashion merchandise markdowns are far larger than they were in former years (Pashigian 1988:947).

If the significance of price variations over time is recognized, we will suggest that the focus of suggested purchasing systems should be changed. The emphasis in most of the literature is on the purchase, that is, the customer recognizes a need and then goes out to fill that need in a reasonable time period. When, however, price variations over time are substantial it becomes useful for a consumer to consider his/her needs over a longer time horizon and seek to minimize the purchase bill by time oriented shopping strategies.

Some Changed Environmental Factors

Changes in the marketing environment in recent years provide opportunities for consumers to reap a surplus as they utilize the marketing system to their advantage.

1) The retailer is more powerful in many industries than the retailer used to be (Bucklin and Schmalensee 1987; Stern 1987). The retailer has induced substantial concessions from suppliers, including lower cost (Felgner 1989).

2) Sales promotion activities today have increased dramatically in importance (Bhasin, Dickinson, Hauri and Robinson 1989). Important components of sales promotion are couponing and short term price discounts. Both clearly relate to the variability of retail price over time. In 1988 221.7 billion coupons were offered, up from 163.2 billion in 1984 (Lipman 1989) and since 1987 redemptions have increased by 15 percent (Marketing News 1991).

3) Markdowns taken by retailers in fashion merchandise have increased substantially in recent years For example, markdowns relative to sales from 1965 to 1984 increased from 10.2 percent to 19.2 percent in women's fashion apparel and accessories. (Pashigian 1988). Markdowns taken by retailers directly relate to differential prices over time.

4) There is evidence that variability in the quality of products not radically new on the market has declined over many years, perhaps through the efforts of such organizations as Consumers Union. In recent years the quality level has increased and the variance has probably decreased in areas such as cars, standard television, radios and tires (White 1990; Consumer Reports 1991).

5) The number of products and product variants has been increasing at a faster pace than at any point in time. For example, the typical supermarket in 1977 carried 9000 items (Gordon and Lee 1977:247). Since 1987, more than 25,000 new food and grocery products were introduced, many of which were competing brands of the same product (Blythe 1990) and the typical supermarket now carries 25,000 items which the consumer scans in a shopping trip averaging twenty minutes (Schlossberg 1990). During the same period (1977-1990) the number of automobile models sold in the United States increased from 400 to nearly 600 (Ingrassia and Patterson 1990). In addition, choices are becoming more complex as the consumer is forced to consider *hi tech* goods for the home such as VCR's, Compact Disc players, Video cameras and the like. In addition, the number of stores selling every category of merchandise has increased.

The household, too, has changed over time in ways that have altered shopping activities. Two career families have less time available for shopping activities. Having less time for planning individual purchases, they are forced to buy on short notice. Fewer consumers appear to be shopping for leisure because, they do not have the energy and/or interest in "dressing up to go out shopping" and few would choose to spend a free hour poking through the merchandise (Schwadel 1990).

Fragmentation of the work place has increased automobile travel and has changed the out of pocket costs (and perhaps utility) of a shopping trip for the household. Indeed household members pass supermarkets as well as stores selling fashion and specialty goods daily and could pass many more by altering their routes and/or time without substantive additional mileage. Economists have tended to assume that travel and distance are substantial net costs even when out of pocket costs are zero. Indeed these net costs may or may not be positive.

The number and type of sellers has changed; competition within and across store types has increased dramatically. Consumers frequently fail to understand seller behavior, particularly the competitive nature of the marketplace, and the costs of doing business. Not being cognizant of different pricing and markdown strategies of various retail outlets impedes efforts to maximize purchasing power.

The Normative Shopping System

The overall goal of the system is to obtain good value (better than presently received) for the money spent on the goods in relevant merchandise categories recognizing that

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optimization is not a feasible alternative. In order to achieve these goals, the households have to establish minimum quality standards within relevant merchandise categories. The system is designed to take advantage of the substantial variability of retail prices at one point in time and over time. It will tend to be most useful for the kinds of items found in supermarkets, general merchandise and specialty stores. It will not be equally useful in situation where the final price is negotiated because the final prices may not be known without extensive negotiation. The search process for one product interacts with the search process for other products; consumer behavior of shoppers is integrated with an understanding of the behavior of retailers (Dickson and Urbany 1989). A model for the proposed normative shopping system is shown in Figure 1.

point in time and over time.

3. Household Needs. The set of household needs to be covered by the system would most likely include regularly purchased items, i.e. supermarket items, staple clothing items, and other products for home and lawn that are purchased cyclically. The earlier the need is recognized, ceteris paribus, the more the household unit will have an opportunity to take advantage of the retail system.[3] The relevant time period might be as long as one year for some nonperishable items.

4. A set of Acceptable Brands. These brands or product variants meet the household's minimum standards for quality and performance. The more alternatives that remain in the acceptable set, the probability of obtaining a better value. The quality decision is simplified by putting goods into two quality levels, acceptable and not acceptable.

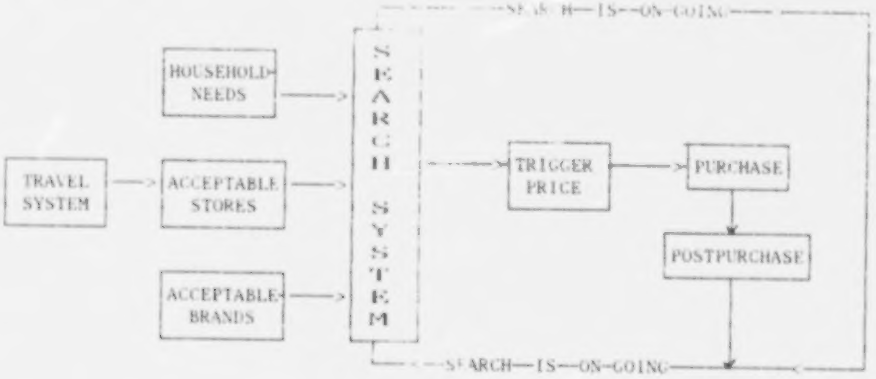

Figure 1: MODEL FOR A NORMATIVE SHOPPING SYSTEM

As shown in the model, the system requires:

1. A travel system. The benefits to a household will be larger if one or more members of the household travel by car on a regular basis to and from work, leisure or other family activities and the like. Household members pass by retail outlets in the process of normal day-to-day living. The net effect is that there are negligible out-of-pocket travel costs for the household.

2. Acceptable Stores. The stores which can be passed in route to and from other activities would comprise the evoked set of stores. The stores, due to price and merchandise policies would be placed into two groups, acceptable and not acceptable. The benefits to the household will be larger if there are sets of retailers to which price tends to be an important variable. Price will tend to be important in large metropolitan areas. Variability of price policies among retailers will add to the potential benefits of the system. For example, if supermarkets have different strategies such as everyday low prices; a deep discount loss leader(s); extra value couponing; high service; or varying combinations of these. Shopping strategies of consumers can be evolved to take advantage of these retailer strategies at one point in time and over time.

5. The Search System Search, in the model, encompasses the purchase process and it is on-going. Those goods and stores which constitute the acceptable set are routinely searched for value. Trigger prices, determined a priori, are "rules of thumb" which trigger a purchase. The search cues to the system would be, "I have six cats to feed; I routinely pass stores A, B, C, D; brands X, Y, Z, ZZ are acceptable." A price of 5 cans/$1.00 of brand Z might be a trigger to purchase of a quantity sufficient fur a designated time period. During postpurchase the good is consumed and the quality of the brand assessed. The price behavior of the retailer in the product category is observed. Additional examples of trigger prices would be to purchase an apparel item only when the price is reduced by 70% or a certain size of toothpaste only when the final price will be 10 cents (after double or triple value couponing).

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[3] The system is playing the market, playing retailer against retailer, and a retailer against itself over time.

Implementing the System

The benefits of the system relate to four assumptions: (1) There is no cost of travel, search/shopping is a by-product of other travel activity. (2) The individual derives as much utility from the shopping process related to the created system as s/he would derive from doing anything else. (3) The consumer is disciplined in purchasing, not inclined to (unplanned) impulse buying. (4) The household has the necessary resources to pursue the system. Consumers meeting these criteria will benefit from using a shopping system to purchase some categories.

The shopping system requires that a household specify the types of goods to be covered, as well as acceptable quality levels. Additionally, one or more household members must be willing (and able) to routinely search the acceptable stores. The search system becomes a three-stage process: (1) A need is recognized. (2) The need is integrated system. (3) The purchase trigger is activated by acceptable price reduction of an acceptable brand or item.

Household members involved in implementing the system should develop an understanding of how prices of specific goods change in his/her geographic area over time. Consumers will also get a feel for the value and timing of coupons offered in given merchandise categories. Additional information should be integrated into the system where appropriate.

The decision system proposed here can be simpler to implement than the alternative of evaluating the quality and price of each relevant option in the marketplace. There are, however, some additional complexities introduced by such a system. The handling, storage and inventory costs are important to the household (Granzin and Bahn 1989). Storage implies time and there is the time value of the resources that are tied up (Morgan and Duncan 1980). Some questions raised are: What is the cost of capital for a specific household? What are the opportunity costs of time to a highly paid executive if he has no options for extra income? For those desiring to increase their benefits from the system above zero (extra) travel, how does one calculate the costs of travel and weigh these against the anticipated benefits? Will there be better buys tomorrow, next week, next store? A further complexity is that a modicum of planning and budgeting is required--as traditionally these elements have always been integral to family financial management.

An important characteristic of our shopping system is that the household can evolve the system to the level of complexity that it can and desires to handle. The system can be limited to a small number of frequently purchased products. A shopping system could be implemented just one day a week. One member of the household could do all the shopping. Alternatively the system may also be informal in that consumers may use insights obtained from understanding the retailer behavior and the shopping opportunities presented by the economic system. One can "skim the system," i.e. , pick and choose the elements that are seen as desirable.

It is also possible to approach the shopping system dynamically over time, in other words to take specific cognizance of learning. Howard (1963) has argued that more search and effort may be required in the initial stages, in terms of extensive shopping effort. As one learns, the amount of time necessary to get the same benefits from the system is less. Dickson and Urbany (1989) outline this in terms of high initial fixed costs and lower variable costs as the household learns. Spreng and Olshavsky (forthcoming) suggest that high knowledge consumers have a greater ability to process information.

Implications

The proposed shopping system is designed to enable consumers to "get a bigger bang for the buck" in relevant product categories. It is postured from a positive and offensive perspective on the market. A key distinction is that time is treated in a way so that the consumer will take advantage of both price variations among retailers at one point in time and within one retailer and the system over time for as long a time as feasible, considering the costs of time related factors, such as storage, the planning horizon of the consumer, limited resources, and the difficulty in recognizing wants. But while the differences in the treatment of time in the context of the shopping system may not appear major, the impacts on the decision rules and behavior of consumers adopting such systems would be large. Further if many consumers purchased in a manner suggested by our shopping system, the impact on the marketing, retail, and economic system might be significant. Some changes with respect to the consumer purchase process are now indicated.

Goals of the prepurchase process become twofold. First, given a need, the goal in most instances is not to establish the best buy or indeed to trade off price and quality at one point in time. The goal is to develop an acceptable level of quality or performance. Thus, rather than employing the *optimal* compensatory rule, the system calls for the sub-optimal, but simpler, conjunctive rule. The consumer eliminates brands or products which are not satisfactory either in terms of meeting functional and/or psychological needs. The second goal is to establish specific trigger rules for a particular purchase.

There is an advantage to the consumer of not focussing on the best buy. A general, often inherent, disadvantage of identifying best buys is that the high rating is likely to increase demand and without an almost immediate quantity increase, the price must go up or the item becomes out of stock or both. Specifying those brands that will not do the job is unlikely to focus demand on one or two items. The more alternatives that satisfy the consumer in the context of The focus of market offerings in the set of retailers, the better.

Search becomes a continuous activity in that consumers are integrating search into their day-to-day activities. It emphasizes the deliberate and systematic acquisition of information (Mazis 1988). Shoppers can think of elements of this activity as continually updating their locational and competitive maps (Dickson and Urbany, 1989:17). As suggested previously the sooner the want is recognized the greater the opportunity that the consumer will get a better buy from the retail system.

Search is also changed in that the search process does not culminate in a decision. Present decision making implies that the decision should be made from among A, B, and C after an appropriate search time. While this decision perspective may be partly relevant even in the shopping system for time pressed decisions, more frequently, the trigger should be the value suggested by a designated low price. Individual purchases will be made without substantial immediate prior search.

Maynes has stated (1976) that consumers should attempt to purchase the same quality product at a lower price or to obtain a higher quality at the same price. By contrast, the important aspect of quality is not the relative ranking of the products, it is absolute variance in quality that is of major importance (and more frequently a semi-variance to the down side). If a decision maker is willing to make the assumption that quality among eight items or three items in the set evoked is reasonably close then the other relevant variables, perhaps price, become the primary attributes. The focus remains on the eliminating products in the quality range that is not acceptable from purchase consideration.

In this era of time pressed dual earner families, the time is right for the appropriate use of the proposed normative shopping system. Faced with the proliferation of products on the shelves, less time available for shopping activities and an increased number of decisions, consumers appear to be more in need of *buymanship* than at any previous time. The literature of the past twenty years is replete with evidence that consumers did not follow the rational decision model advocated by consumer educators. Clearly, today's consumers have neither the time nor inclination to follow extensive guidelines of do's and don'ts, nor do they seek out information and weigh alternatives for each purchase. Thus, a normative shopping system which allows for individual tastes and preferences, suggests a priori decisions regarding acceptable quality and price, and can reduce the cost of time in search and purchase, should be acceptable and readily implemented by a large number of households.

References

Becker, Gary W. (1965), "A Theory on the Allocation of Time," Economic Journal, 75, 193-516.

Bettman, James R. (1979), An Information Processing Theory of Consumer Choice, Reading, MA: Addison Wesley.

Bhasin, Ajay and Roger Dickinson (1987) "Extra Value Couponing Strategic Implications for Supermarkets," Agribusiness, 3, 293-306.

Bhasin, Ajay, Roger Dickinson, Christine G. Hauri, and William A. Robinson (1989), "Promotion Investments that Keep Paying Off," Journal of Consumer Marketing, 6 (Winter) 31-36.

Blythe, John (1990) "Overstimulated Consumers Challenge Designers, Retailers," Marketing News, August 6, p. 8.

Bucklin, Louis P. (1970), "The Marketing System and Channel Management," in Managerial Analysis in Marketing, Glenview, IL: Scott, Foresman and Company.

Bucklin, Randall and Diane H. Schlmalansee (1987) "Viewpoints on the Changing Consumer Goods Distribution Scene," Marketing Science Institute, Cambridge, MA.

Coles, Jessie V. (1938). The Consumer-Buyer and the Market. New York: John Wiley & Sons, Inc.

Cude, Brenda J. (1988), "Consistency in the Quality of Products of Fourteen Major Manufacturers 1975-1984," Proceedings of the American Council on Consumer Interests, Columbia, MO. ACCI, 93-98.

Cude,Brenda J. (1987), "Estimating the Returns to Informed Decision-Making," Journal of Consumer Affairs, 21 (1), 86-95.

__________(1989), "An Overview of Selected Consumer Decision Rules," Proceedings of the American Council on Consumer Interests. Columbia, MO: ACCI.

Deacon, Ruth E. and Francille Firebaugh (1988), Family Resource Management, Boston: Allyn & Bacon.

Dickson, Peter R. and Joel E. Urhany (1989), "In Search of Home Economies Beyond the Theories of Gary Becker, George Stigler, and Herbert Simon," Paper presented at the American Council on Consumer Interests Annual Conference. Baltimore, MD.

Eastwood, David B. (1988), "Consumer Sovereignty and Advertising," in E. Scott Maynes and the ACCI Research Committee, eds. The Frontier of Research in the Consumer Interest, ACCI, Columbia, MO, 639-646.

Edwards, Ward (1984), "How to Make Good Decisions," Acta Psychologica, 56, 7-10.

Engel, James F. (1970), Annual meeting, ACCI.

Felgner, Brent H. (1989), Marketing News, (January 16), 1.

BEST COPY AVAILABLE

Garman, E. Thomas (1991) Consumer Economic Issues in America. Boston: Houghton Mifflin Company.

Granzin, Kent L. and Kenneth Bahn (1989), "Consumer Logistics: Conceptualization, Pertinent Issues and a Proposed Program for Research Journal of the Academy of Marketing Science, 17 (Winter), 91-102.

Gordon, Leland J. and Stewart M. Lee (1977). Economics for Consumers. New York: D. Van Nostrand Company.

Hawkins, Del I. and Gary McCain (1979), "An Investigation of Returns to Different Shopping Strategies," Journal of Consumer Affairs, 13 (Summer), 64-75.

Herrman, Robert O., Hsiu-Mei Tsai, and Rex Warland (1988), "Patterns of the Use of Recommended Food Buying Practices," Department of Agricultural Economics and Rural Sociology, Penn State, (March).

Howard, John A. (1963), Marketing Management, Homewood, IL: Irwin.

Hughes, Kathleen A. (1990). "Shoppers' Blues: The Thrill is Gone." The American Way of Buying. New York: Dow Jones and Company, Inc., 24-25.

Ingrassia, Paul and Gregory A. Patterson (1990) "Is Buying a Car a Choice or a Chore?" The American Way of Buying. New York: Dow Jones & Company, Inc. 29-30.

Kirby, Gail Hutchinson and Rachel Dardis (1986), "Research Note: A Pricing Study of Women's Apparel in Off-Price and Department Stores," Journal of Retailing, 62 (Fall), 321-330.

Linder, Steffan B. (1970), The Harried Leisure Class, New York: Columbia University.

Lipman, Joanne (1989), Wall Street Journal, (June 26), B4, reflecting data from: Manufacturers Coupon Control Center.

Maynes, E. Scott (1976), Decision Making for Consumers, New York: Macmillan.

Maynes, E. Scott (1989), "Price Discrimination: Lessons for Consumers," Advancing the Consumer Interest, 2, (1), 22-27.

__________and Terje Assum (1982), "Informationally Imperfect Consumer Markets: Empirical Findings and Public Policy Implications," Journal of Consumer Affairs, 16, (Winter) 62-67.

Mayer, Robert N. (1990). The Consumer Movement: Guardians of the Marketplace. Boston: Twayne Publishers.

Mazis, Michael (1988), "Overlooked Mechanisms for Conveying Information to Consumers," in The Frontier of Research in the Consumer Interest, E. Scott Maynes et al. editors, ACCI, Columbia, MO, 225-230.

Olshavsky, Richard (1988), "Determinants of Information Use: Beyond the Simple Cost-Benefit Model," in The Frontier of Research in the Consumer Interest, E. Scott Maynes et al. editors, ACCI, Columbia, MO, 231-234.

Pashigian, Peter (1988), "Demand Uncertainty and Sales: A Study of Fashion and Markdown Pricing," American Economic Review, 78 (December), 936-53. Reid, Margaret G. (1938). Consumers and the Market. New York: F. S. Crofts & Company.

Schlossberg, Howard (1990) "Effective Packaging 'Talks' to Consumers," Marketing News. August 6, p. 6.

Schwartz, Barry (1986), The Battle for Human Nature, New York: W.W. Norton.

Simon, Herbert A. (1957). Administrative Behavior. New York: Macmillan.

__________ (1960). The New Science of Management Decision. New York: Harper and Row Publishers.

Sproles, George B. (1983), "Conceptualization and Measurement of Optimal Consumer Decision-Making," Journal of Consumer Affairs, 17, No 2, 421-438.

Stern, Louis (1987), "Reflections on Channels Research," Journal of Retailing, (Spring) 64, 1-4.

Thorelli, H. B. and Gerald D. Sentell (1982), Consumer Emancipation and Economic Development: The Case of Thailand, Greenwich, CT: JAI Press.

White, Joseph B. (1990) "Car Makers Gear Up to Earn Good Marks in Quality Poll," The Wall Street Journal, July 3, B1.

Uhl, Joseph N. (1982). Cents-off Coupons: Boon or Boondoggle for Consumers? Journal of Consumer Affairs, 16 (1), 161-165.

Reaching and Teaching Low Reading Level Consumers

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Members of ACCI's Consumer Education Committee have a long-time concern regarding the difficulties in both reaching and teaching consumers with limited reading skills. Even when we arrange for work-site lessons, pre-release sessions at correctional institutions, housing authority programs, or other ways of reaching a few members of this audience, most consumer educators lack the multidisciplinary expertise for effective teaching.

The problems for individuals, their families, employers, the community and society as a whole are spelled out in the study, "Workplace Competencies: The Need to Improve Literacy and Employment Readiness" (Office of Education Research and Improvement, US Department of Education, 1990) and many other reports of the impact on the society of having so many adults with limited literacy skills.

My first exposure to the interface between literacy and consumer education occurred in the mid-70s. In a fifth-grade classroom in suburban St. Louis, a consumer education unit was added to the curriculum of one group of youngsters. Measurements were then made of both the test and control group. Both reading and computational skills of the test group had risen beyond those of the control group -- presumably because of greater interest in the subject matter. Several years later, a module was published by the Michigan Consumer Education Center on using consumer education content to teach reading. And the 1987-91 focus of the Cooperative Extension System on Family and Economic Well-Being highlighted the financial/consumer problems of many "working poor" families with limited income and literacy.

In our search within North Carolina for sites and settings in which teachable moments with low-reading-level audiences might occur, we also seek to find suitable materials to use, and/or to learn how to go about developing such materials. Any of you who have gone down this path know that we are NOT going to tell you we found easy answers. But we will describe two very different approaches to the problem -- and allow time for discussion on how you might go about deciding what course to take in your situation.

a. Literacy Specialist. This expert looks at persons with limited reading skills (for whatever reasons), is most concerned about the severe impact of that limitation, and focuses on trying to improve literacy skills as the primary objective. A literacy specialist may or may not choose to use consumer education materials.

b. Consumer Educator. This expert looks at persons with limited reading skills and sees their need for consumer education -- or coping skills -- or life skills -- and tries to provide the consumer knowledge, attitudes and skills involved. The results are usually print materials intended to communicate to the audience at a low reading level. Improvement in reading and other literacy skills may or may not occur. The need for multiple forms of expertise is frequently lacking -- literacy itself, various aspects of communication (conceptual, perceptual, visual, written) and graphic designers, unless a team of experts and users is part of the development process.

Our first presenter represents the latter approach. Gail Baron is a Program Developer with Alberta Consumer and Corporate Affairs, a Canadian provincial department. She organized the teams which developed the "Consumer Talk" program for use with low-reading level audiences, including provincial literacy programs.

Rena Soifer is a literacy specialist, and is the director of the Workplace Academy operating out of Eastern Michigan University.

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"Consumer Talk": Development of a Canadian low-literacy consumer education program

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This video presentation describes consumer education materials developed especially for a low-literacy, low-income audience by Alberta Consumer and Corporate Affairs (a department of the provincial government in the province of Alberta, Canada).

Project Overview

"Consumer Talk" is a series of consumer information sheets written in Basic English and presented in tabloid-newspaper format. The series currently includes 12 issues: Advertising, Banking, Buying a Used Car, Car Repairs, Credit, Returns (store return policies), Shop Around, Shopping at Home, Tenants: Moving In, Tenants: Living There, Tenants: Moving Out, and Trouble with Credit.

Target Audience

"Consumer Talk" was developed for adult basic readers. Basic readers do not read routinely for work or pleasure and have a difficult time with everyday reading. This audience may include new Canadians learning to read English as well as adult literacy and basic education students. The series was designed for use in a formal educational setting under the guidance of a facilitator, and it is also appropriate for adults reading independently at a basic level.

What is Basic English?

Basic English is characterized by:

- use of common words
- prevalent use of simple sentences
- ample use of illustrations, including examples of forms and letters
- frequent use of personal stories to explain concepts. Photostories are especially helpful.
- special design features, including careful control of the amount of information presented under a single heading; page design that cues the reader on information that belongs together; and type face and size that allow maximum ease in reading.

Rationale

The Department's regular collection of print consumer education material serves a literate (high school reading level) audience. The "Consumer Talk" series allows the Department to provide consumer education materials to an expanded audience.

Objectives

"Consumer Talk" will help readers to develop: an awareness of their rights and responsibilities as consumers; some personal strategies for dealing with consumer problems; and an awareness of sources of consumer information and help.

Worksheets

A set of worksheets is available to supplement each issue of "Consumer Talk." The worksheets comprise a variety of exercises that require the learner to read "Consumer Talk" and reflect on his or her own experience.

Distribution

The publications are distributed through a variety of outlets, including community agencies that work with the target audience (e.g. immigrant aid groups, social services organizations), adult basic educators, teachers of English as a second language, volunteer literacy tutors, educational programs in correctional institutions, public libraries, and the Department's own offices.

Recommended resources

Baldwin, R. (1990) Clear Writing and Literacy. Toronto, Canada: Ontario Literacy Coalition.

Cutts, M. & Maher, C. (1980) Writing plain English. Stockport, U.K.: Plain English Campaign.

Doak, C.C., Doak, L.G., & Root, J.H. (1985) Teaching patients with low literacy skills. Philadelphia, Pennsylvania: J.B. Lippincott Co.

Sample copies of the tabloids and the worksheets are available from the author.

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Interest in the Consuming Interests of Youth: Research, Marketing, Education and Policy Perspectives

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Youths' consumption-related activities occupy a particular place among all their experiences as developing individuals. This paper summarizes selected studies on youthful consumers and uses an expanded conception of consumer well-being encompassing effective, efficient micro-consumer decisions and a healthy development of the individual. Suggestions for consumer interest researchers and educators include addressing macro-consumption sensibilities: a concern for the global society, considering impacts of individual actions on the environment, and concerns for distributive justice.

Research Approaches

How youth consumer issues are studied reflects the particular focus of the investigator and disciplinary boundaries. Some research has used theoretical and multi-theoretical frameworks; other works have been criticized as a-theoretical or as imposing theory upon data rather than a priori to the design (Rossiter, 1978; Kuhlmann, 1983; Rettig and Morteson, 1986). Heinzerling (1990) identified twenty specific theoretical frameworks that could and/or have guided research on children as consumers including: cognitive components, processes and quality theory, decision-making, learning, situational variables, values and perception theories.

Marketing research on children and adolescents is driven by an interest in the effectiveness of marketing activities and by a need for information upon which to plan new activities. Marketing focuses on directional influence or persuasion and does not take the individual consumer viewpoint (Wilkie, 1988). Youths' marketplace activities and expenditure changes over time have been tracked and offer insights about spending potential (McNeal, 1987). Research tied more closely to consumer interests as opposed to marketing to consumer interests, has studied the development of financial management competence of youth and the consumer lifecycle (Rettig and Morteson, 1986; Stamphl, 1978, 1979).

Youth Consumer Socialization Studies

Socialization research has attempted to explain and predict youths' acquisition of consumer skills and media use associated with consumption. Consumer socialization has been referred to as the process of acquiring and developing consumer values, attitudes, norms, skills, behaviors, motives and knowledge which are related to consumption and family financial management (Kuo, 1987; Rettig and Morteson, 1986). Stemming initially from an approach to studying television advertising effects, socialization research has been used by consumer educators and family management scholars as well as within ongoing consumer marketing research (McNeal, 1987; Moschis, 1987; Ward, Klees and Wackman, 1990). Moschis (1987) identified three major types of theoretical approaches that could be used to explain consumer socialization. Developmental or lifespan theories address changes in the individual's priorities and the other social, physical and psychological changes one experiences over a lifecycle. Social learning theory emphasizes external controls over the socialization process. Studies look at socialization agents: stimulus-response situations, influences of reinforcement, social interaction, modeling and role theory. The third approach to explaining socialization, that of social systems, emphasizes the individual within his or her group affiliations and behaviors within cultures or subcultures. Norms and processes within different cultures will affect socialization learning outcomes.

How various forces and individuals impact on a child's consumer socialization is influenced by the child's stage of development, economic class of the family, opportunities for contact, and other factors. Peers, family members, the marketplace, advertising, educational programs and messages, and employment are all potential socialization agents or mediators for children in the development of consumer attitudes, skills and knowledge.

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Family Socialization Influences

The importance of family interactions and parents in the development of the youthful consumer is clear as one reviews studies of the socialization process. Parental influence on consumer socialization of children is often incidental; parents seem to expect their children to learn through observation or "osmosis" (Birckmayer, 1984). Usually discussions about consumption behavior are initiated by the child's request for a product. Parents teach skills directly through prohibiting actions or purchases, giving lectures, holding discussions, and indirectly by acting as an example and allowing the child to learn from experiences (Ward, Wackman and Wartella, 1977).

Kuo's (1987) three school survey of 7th, 10th and 12th graders found support for parental role modeling in social learning of consumer skills. Pippidis's (1989) study that surveyed teenager and parent pairs suggested the importance of the family environment, teen experiences and the parent-teen relationship in the development of financial management competencies of youth. Marshall and Magruder (1960) reported that children are more knowledgeable about the use of money when given wide experience and opportunities in saving and spending and when parents handle the family income wisely. Turner and Brandt (1978) found that children learned consumer skills when they are given opportunities to participate in consumer decision-making and share family responsibilities. In a survey of over 400 Georgia middle school children, Doss (1990) found that how children used money was influenced by their income source and amount. Savings and giving increased with the amount of income from earnings.

In general, findings seem to indicate the value of positive experiences with money income. Across studies, more earnings and a regular income seem to support greater knowledge on consumer and money topics and a greater propensity to save (Marshall and Magruder, 1960; Dale, 1973; Turner and Brandt, 1978; Hollister, Rapp and Goldsmith, 1986; Hampton, Bouton and Huggans, 1988; Pippidis, 1989; Doss, 1990).

Socialization studies have paid the most attention to purchasing and marketplace interactions. How the family uses and consumes goods, the relative importance of consumption as an experience for the developing child, and social learning about non-consumption issues such as savings has received much less emphasis (Kulhmann, 1983; Rettig and Morteson, 1986; Ward, et al., 1990). McNeal (1990) found that children aged twelve and under have been increasing their overall savings rate. Between 1968 and 1984, the average rate was quite steady at 15%; in 1989 it was up to an average of 30%. He suggested that with increased financial resources, children might be learning the virtue of savings and/or may be encouraged by parents to establish a better savings habit.

The family is also important as a mediator of the affect of other socializing agents. Parent-child communications have been found to have some influence over time on the development of adolescent brand preferences and the ability to distinguish facts from exaggerations in advertising messages (Moore and Moschis, 1981). Robertson, Rossitier and Gleason (1979) found that families mediate the effect of TV viewing.

Youth as a Consumer Market

Teens' economic power has been tracked by market researchers such as the Rand Youth Poll, Scholastic and Seventeen magazines, Teenage Research Unlimited, and the Roper Organization (Walsh, 1985; Hauser, 1986; Between Parents and Children, 1989). The majority of teenagers' spending continues to be on themselves, is discretionary, and their financial resources are substantial. Spending is often on high ticket items such as cars, video and other electronic equipment. The more traditional teen-age purchasing continues as well--snacks, movies, clothing, cosmetics (Caprino, 1990).

National teenage earnings in 1990 were reported by Teenage Research Unlimited, (TRU),to be at $101 billion up from $89 billion in 1989 ("New Breed," 1991). The Rand Youth Poll estimate for spending by 13-19 year olds in 1987 was $53.7 billion per year on themselves and $27 million on family food. Teenagers also influence how their parents spent $142 billion ("Teen Spenders," 1988). TRU estimated the average teenager's income in 1989 was $60 per week, (Charboneau, 1989).

The economic power of teenagers has raised concerns about their premature affluence (Bachman, 1983). Their consumption level and style is beyond their productive capacity in an independent adult world. Child development experts are concerned that teenagers acquire social maturity through consumer goods such as automobiles but lack the psychological maturity of adulthhood (Greenberger and Steinberg, 1986).

Also of concern is the amount of time teenagers commit to earning money and an overly materialistic orientation to adult life. Greenberger and Steinberg (1986) found that many of the service-sector jobs held by teenagers had minimal training associated with them, and the skill requirements were bare minimum. So reinforcement of school learning and skill development often are missing in jobs held by teenagers. Teenagers with excessive workplace involvement may lack enough opportunities to experiment with other, non-employment roles such as volunteering and to explore their identities, both important developmental tasks in adolescence.

Children 12 years of age and under are seen as an important market themselves. McNeal (1990) estimated that the 32.2 million 4 to 12 year olds in the U.S. spent $5.15 billion in 1989. Six year olds spent an average of $2.59 per week and 12 year olds spent $6.90. Children's annual expenditures were concentrated in five major categories: snacks and sweets ($2 billion); toys and games ($1.9 billion); clothing ($700 million); movies, entertainment and souvenirs ($600 million); and video games and arcades ($486 million).

Companies that market to children use highly creative promotional strategies such as kids clubs, product tie-ins, direct mail relationships and premiums to capture young people's attention and sales (Sains, 1989). Selling America's Kids (1990), a recent Consumers Union study, is a critical examination of promotions that are directed at children. The study described burgeoning product licensing promotions with sales of $64 million in 1989, a proliferation of merchandise cross-selling, product placements in movies and videos, the use of celebrities to sell products, and classroom materials with commercial messages, all as illustrations of how promotions permeate young people's daily routines. A vast array of products are promoted including the familiar children's products like cereals and toys as well as kiddie cosmetics, frozen dinners, cameras for children, shoes and clothing, videos and electronic equipment (Sellers, 1989; Moore, 1990).

Children are also of economic interest because of their future role as adult consumers and their influence on the consumption practices of their parents and family. Marketing strategies are directed at capturing loyalties early in life since they are reported to be carried into adulthood. Reverse socialization, the influence of children and adolescents on adult consumer practices, is an emerging area of investigation (Between Parents and Children, 1989; Ekstrom, Tanserhaj and Foxman, 1987; Mangleburg, 1990).

The Roper Organization's survey on U.S. family decision making, Between Parents and Children, (1989) interviewed parents with children 7 to 17 years of age and asked how children influenced consumer choices made. Children were reported to exert the greatest influence (74-79% having a lot or a fair amount to say about the decision) on television program choice, where to go for fast food, what to do together for fun, and clothes the children wear. Parents viewed their children as much more involved in family decisions than they were as children. One study recommendation is that marketers direct advertising messages for a wider array of products and services directly to children.

Youth Consumer Education

School courses historically have covered aspects of consumer education when emphasizing life problems and buymanship (Green, 1988). In the 1970s through the mid 1980s, a national, systematic approach to consumer education for children and adolescents was conducted and curricula and courses were instituted. Disagreement continues on the content, focus and appropriateness of this education. Research findings conflict as to whether consumer education curricula and programs make a difference (Green, 1988).

What is clear is that children have already acquired knowledge, attitudes and motives on most subjects that might be included in education about the consumer role before coming to the classroom (Kuhlmann, 1983). Belk, Bahn and Mayer (1982) found that children had already developed stereotypes about consumption symbols by the second grade. It seems that consumer learning begins early with the socialization of preschoolers, is significantly built within the family throughout childhood, is affected by other socialization agents such as the media and peers, and can be supplemented in schools and through other educational programs and experiences.

Consumer education can be criticized as containing adults' perceptions of what children ought to know. Alternatively, consumer education could be based on children's needs, reflecting an understanding of children's cognitive abilities and consumer-behavior patterns. Approaches for children could be based on information processing skills, explanations of the persuasive intent of advertising and how to find product information. Knowledge, behaviors and skill-building can be emphasized. Older children and adolescents could deal with more abstract attributes of consumer decision-making and the marketplace and different strategies for evaluating products. They also are capable of critical reflection on the use of goods to construct meaning of one's self and the world. Marketing research on children's cognitive abilities within consumer situations offers ideas for designing education programs (Macklin and Machlert, 1989; Peracchio and Mita, 1989; Roedder-John and Cole, 1986; Roedder-John and Whitney, 1986; Soldow, 1985). Visualizations, supporting memory strategies, using scripting techniques to learn effective consumer behaviors and basing program approaches on significant environmental factors can strengthen educational interventions directed at children.

Education could supplement parental training which occurs indirectly and irregularly. Classroom and out-of-school educational programs might be devised in which parents undertake some consumer training activities. This would reinforce and support family communications, experiences, and teaching related to consumption which include both economic and sociological aspects. Kourilsky and Murray (1981) reported the effectiveness of economic education with kindergartners was due, in great part, to the participation of the family and to discussions within the family. Armstrong and Brucks (1988) built a rationale for adult education programs on advertising to increase parents' effectiveness as socialization agents.

Some educational materials offered for use in schools by businesses and some entire school programs have been criticized as being too commercial or too centered on consumption (Harty, 1979; "Selling America's Kids," 1990). A 1984 content analysis of free curriculum materials found that business-sponsored materials contained significantly more commercial content and advertising than materials from nonbusiness sponsors (Rudd and Buttolph, 1987). Consumer education has also been criticized as anti-business and/or lacking in economic understanding. Teachers responsible for courses may lack even elementary training in economics. The goals of consumer education have been recommended as those that would prepare youths for their adult consumer role in the economy with a sound basis in economic principles and an understanding of the marketplace (Bymers, 1983; Robinson, 1988).

In addition to enriching consumer education through more direct use of consumer and related research findings and better application of economic theory and family resource management principles, some critics want to change and/or broaden what is included in the curriculum and how it is taught. Metzen (1988) recommended including household choice-making, proper use and maintenance of products, and nonconsumption experiences. The understanding of all resources and their value, in addition to monetary resources, as well as the ethical and societal responsibilities associated with consumption, have been proposed as important concepts within comprehensive consumer education. Copa and Schuler (1987) want to stretch and develop curricula further by supporting more developed ways of thinking. They suggested that consumer issues be taught using a human concerns approach to develop critical thinking about practical consumer dilemmas.

Leming (1983) suggested two interpretations for social dimensions within consumer education curricula. The social/political interpretation focuses on consumer participation in the social determination of consumption. Education could emphasize the complexity of the market, forces acting upon consumers, and how, through social and political action, to maximize individual and societal well-being. A second social dimension to consumer education is one of a personal/moral interpretation. Leming believes the latter interpretation is of greatest interest to adolescents who can understand principles involved in personal decisions about available resources, and who can observe the consequences of their consumer choices on the well-being, dignity and happiness of others.

Also supporting a moral interpretation, Peterson (1987) suggested research and teaching about the ethical aspects of consumption

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based upon John Rawls' theory of justice. She criticized family economics/consumption theory as culture-centric and ignoring duty and obligation. Ethical inquiry within consumer education would analyze issues such as inter-generational trade-offs, resource depletion and environmental pollution, and moral questions related to advertising and hazardous substances. Metzen (1988) noted that problems related to trade-offs between satisfaction of present consumers and the needs of future consumers are of great significance and should be a part of the consumer conscience.

Youth Consumer Interest Policies

Understanding the developmental needs of youth suggests directions for policies. Voluntary and mandatory market protection measures may be required to protect the safety of children buying and using certain products and services. Exclusion of children from certain markets has been mandated, for example, cigarettes, alcohol and some toxic materials. Information disclosure and educational programs to be useful to children and adolescents, must include presentation in an understandable manner given the level of cognitive development. Retailer practices and advertising messages aimed at children should reflect children's abilities and needs.

Children experience special problems in the marketplace. Stamphl's (1978) Consumer Elements by Consumer Lifecycle Stage lists typical marketplace problems of children. They have underdeveloped cognitive responses to ads, want everything and are unable to articulate questions or get usable explanations from parents or teachers. Children also lack knowledge and understanding of the marketplace and have limited and unorganized product knowledge. Adolescents, compared to younger children, are gaining experiences in the marketplace and developing more sophisticated understandings about consumption. Teenagers' marketplace problems, according to Stamphl's framework, include difficulty in identifying significant product differences and a weak understanding of both the value of money and their own tastes and preferences.

The marketplace itself is designed primarily for adults and so are its products and services. Eye-level displays may be out of sight for young customers. Some merchants are unresponsive and even hostile towards children unaccompanied by adults. Adult clerks and customers may express frustration and impatience with children who take a lot of time making purchase choices. Retailers offer merchandise which is harmful and inappropriate for children (McNeal, 1987).

Public and private policies related to youth as consumers have been proposed, implemented, rescinded, and revised as in the case of limiting television advertising to children (Carnevale, 1991). Ethical and legal policy issues attend to the rights, vulnerabilities and needs of youth and the interests and responsibilities of society for youth (Armstrong and Brucks, 1988; Paine, 1984; Reece, 1986; Selling America's Kids, 1990). Ethics will direct business towards marketing activities based on veracity rather than an absence of deception, or fairness, and will reflect a respect for and an avoidance of harm to children (Paine, 1984).

The practice of studying and marketing to children for profit has been criticized on legal and ethical grounds (Charren, 1990; Hite and Eck, 1987). A large proportion of research on children as consumers is devoted to the role and influence of advertisements, especially television advertising. The effect of television ads is cited here as a societal concern and also addressed as an information source and a point of interaction between parent and child.

In the future, youth-focused consumer education and research must also attend to the special needs of at-risk populations. For example, there may be unique consumer problems and educational needs of non-college bound youth as described in the W.T. Grant Foundation Commission report The Forgotten Half (1988). Although the report emphasized needs for employment and training opportunities, effective consumption behavior and sound consumer understandings could substantially contribute to a successful independent life for these individuals. The draft summary report of the Consumer Competency Roundtable (1991) placed high priority on consumer education for minority and other special groups. Minorities, low income and younger consumers tended to score lower on consumer knowledge in the 1990 Consumer Federation of America's Consumer Competency Survey. The Roundtable recommended developing a national strategy and products for teaching consumer life skills to youths in out-of-school community settings.

The big question of what the marketplace does to children remains

(Becker, 1987). It has only been raised here and in most research on children as consumers (Ward, et al., 1990). Social and environmental responsibilities can be related to consumer decisions through integrated curricula and reinforced informally by parents within the family.

References

Armstrong, G.M. & Brucks, M. (1988) Dealing with children's advertising: Public policy issues and alternatives. Journal of Public Policy and Marketing, 7, 98-113.

Bachman, J.G. (1983) Premature affluence: Do high school students earn too much? Economic Outlook USA, (Summer), 64-67.

Becker, B.W. (1987) Book Review of Children as Consumers. Journal of Consumer Affairs, 21, (Winter), 342-344.

Belk, R.W., Bahn, K.D., & Mayer, R.N. (1982) Developmental recognition of consumption symbolism. Journal of Consumer Research, 9, 4-17.

Between Parents and Children. (1989) USA Weekend/Roper Report on Consumer Decision Making in American Families, The Roper Organization, Inc. NY.

Birckmayer, J. (1984) Children and money: How parents can help children learn about money. HDFS 23, NYS College of Human Ecology, Cornell University, Ithaca, NY.

Bymers, G.J. (1983) On being consumer educators in the 1980s. Journal of Consumer Affairs, 11, (Winter), 63-79.

Carnevale, M.L. (1991) FCC adopts rules on children's TV...,. Wall Street Journal, (April 10), B6.

Caprino, M. (1990) Now teenagers have the money...,. A.P. News Release in Syracuse Herald American, (June 24), F1.

Charboneau, F.J. (1989) Mr. Green Teen. American Demographics, (March), 13-14.

Charren, P. (1990) What's missing in children's TV? Christian Science Monitor Monthly, (December), 28-34.

Consumer Competency Roundtable. (1991), draft summary report, U.S. Office of Consumer Affairs, Washington, DC.

Copa, P.M. & Schuler, B.L. (1987) Thinking critically in the teaching of consumer issues. In American Council on Consumer Interests---The Proceedings 33rd Annual Conference, 153-157.

Dale, J.A. (1973) Comparison of monetary concepts of kindergarten children and first grade children. Master's Thesis, Oklahoma State University.

Doss, V. (1990) Children as consumers: The impact of the family situation. In Proceedings, Southeastern Regional Association of Family Economics Home Management Conference, Florida Cooperative Extension Service, University of Florida, Gainesville, FL.

Ekstrom, K.M., Tanserhaj, P.S. & Foxman, E.R. (1987) Reverse socialization: How parents acquire consumer skills from children. In Advances in Consumer Research 14, 283-287.

Green, D.H. (1988) The role of secondary schools (in consumer education). In Maynes, E.S. et al., The Frontier of Consumer Research, Proceedings of the International Conference on Research in the Consumer Interest, American Council on Consumer Interests, 819-829.

Greenberger, E. & Steinberg, L. (1986) When Teenagers Work: The Psychological and Social Costs of Adolescent Employment. Basic Books, NY.

Hampton, V.L., Bouton, R. Huggans, J. (1988) Children's knowledge of money and consumer purchases. In American Council on Consumer Interests--The Proceedings 34th Annual Conference, 158.

Harty, S. (1979) Hucksters in the classroom: A review of industry propaganda in schools. Center for Study of Responsive Law, Washington, DC.

Hauser, G. (1986) How teenagers spend the family dollar. American Demographics, (December) 38-41.

Heinzerling, B.M. (1990) Roundtable: Middleyear children as consumers. In American Council on Consumer Interests--The Proceedings 36th Annual Conference, 287.

Hite, R. & Eck, R. (1987) Advertising to children: Attitudes of business vs. consumers. Journal of Advertising Research, (October/November), 40-53.

Hollister, J., Rapp, D., & Goldsmith, E. (1986) Monetary practices of sixth grade students. Child Study Journal, 16(3), 183-190.

Kourilsky, M. & Murray, T. (1981) The use of economic reasoning to increase satisfaction with family decision-making. Journal of Consumer Research, 8, (September), 183-188.

Kuhlmann, E. (1983) Consumer socialization of children and adolescents: A review of current approaches. Journal of Consumer Policy, 6, 397-418.

Kuo, C. (1987) The learning of consumer skills in adolescents: An eclectic approach. Paper presented to 78th Annual Meeting of Association for Education in Journalism and Mass Communication, San Antonio, TX.

Leming, J.S. (1983) Consumer decision making--the social dimension. NASSP Bulletin, (December), 16-20.

Macklin, M. C. & Machlert, K.A. (1989) Development of an attitude scale appropriate for use with preschoolers. In Advances in Consumer Research, 16, 792.

Mangleburg, T.F. (1990) Children's influence on purchase decisions: A review and critique. In Advances in Consumer Research, 17, 813-825.

Marshall, H.R. & Magruder, L. (1960) Relations between parent money education practices and children's knowledge and use of money. Child Development, 31, 253-283.

McNeal, J.U. (1990) Children as customers. American Demographics, (September), 36-39.

McNeal, J.U. (1987) Children as Consumers: Insights and Implications. MA: Lexington Books.

Metzen, E.J. (1988) A college course in consumer education: A critique. In Maynes, E.S. et al., The Frontier of Consumer Research, Proceedings of the International Conference on Research in the Consumer Interest, 879-899.

Moore, L.J. (1990) The littlest consumers. U.S. News and World Report, (November 5), 73-75.

Moore, R.L. & Moschis, G.P. (1981) The role of family communication in consumer learning. Journal of Communication, 31, (Fall), 42-51.

Moschis, G.P. (1987) Consumer Socialization: A Lifecycle Perspective. Lexington, MA:Lexington Books.

"New Breed," (1991) U.S. News and World Report, (January 21), 13.

Paine, L.S. (1984) Children as consumers: An ethical evaluation of children's television advertising. Business and Professional Ethics Journal, 2 (Spring/Summer) 119-145.

Peracchio, L.A. & Mita, C. (1989) How do young children learn to be consumers?: A script processing perspective. In Advances in Consumer Research 16, 790.

Peterson, A.L. (1987) Justice and consumer education. In American Council on Consumer Interests---The Proceedings 33rd Annual Conference, 261-266.

Pippidis, M.R. (1989) Family influence on the acquisition of teen financial management nehaviors--a preliminary study using socialization theory. Master's thesis, Graduate School of Cornell University, Ithaca, NY.

Reece, B.B. (1986) Children and shopping: Some public policy perspectives. Journal of Public Policy and Marketing, 5, 185-194.

Rettig, K.D. & Morteson, M. (1986) Household production of financial management competencies. In Deacon, R. & Huffman, W. eds., Human Resources Research 1887-1987, Iowa State University, Ames, Iowa, 137-147.

Robertson, T.S., Rossiter, J.R. & Gleason, T.C. (1979) Children's receptivity to proprietary medicine advertising. Journal of Consumer Research, (December), 247-255.

Robinson, J.R. (1988) The content of a college-university course in consumer education. In Maynes, E.S. et al., The Frontier of Consumer Research, Proceedings of the International Conference on Research in the Consumer Interest, 857-873.

Roedder-John, D. & Cole, C. (1986) Age differences in information processing: understanding deficits in young and elderly consumers. Journal of Consumer Research, 13, 297-315.

Roedder-John D. & Whitney, J.C. (1986) The development of consumer knowledge in children: a cognitive structure approach. Journal of Consumer Research, 12, 406-417.

Rossitier, J.R. (1978) Children's consumer research: A call for rigor. Advances in Consumer Research, 6, 424-426.

Rudd, J. & Buttolph, V.L. (1987) Consumer curriculum materials: The first content analysis. Journal of Consumer Affairs, 21(1), 108-121.

Sains, A. (1989) Here kiddie, kiddie. AdWeek's Promote, (April 3), 14-17.

Sellers, P. (1989) The ABC's of marketing to kids. Fortune, (May 8), 114-16+.

Selling America's Kids. (1990) Consumers Union Education Services, Consumers Union, Yonkers, NY.

Soldow, G.F. (1985) The ability of children to understand the product package: A study of limitations imposed by cognitive development stage. Journal of Public Policy and Marketing 4, 55-68.

Stamphl, R.W. (1979) Family research: Consumer education needs in the family life cycle. Journal of Home Economics, (Spring), 22-27.

Stamphl, R.W. (1978) The consumer life cycle. Journal of Consumer Affairs, 12,(2), 209-219.

Teen Spenders. (1988) American Demographics, (June), 21.

The Forgotten Half. (1988) Final report, Youth and America's Future: The William T. Grant Foundation Commission on Work, Family and Citizenship, Washington, DC.

Turner, J. & Brandt, J. (1978) Development and validation of a simulated market to test children for selected consumer skills. Journal of Consumer Affairs, 12 (Winter), 266-276.

Walsh, D.L. (1985) Targeting teens. American Demographics, (February), 21-41.

Ward, S., Wackman, D.B. & Wartella, E. (1977) How Children Learn To Buy. CA: Sage Publications.

Ward, S., Klees, D.M. & Wackman, D.B. (1990) Consumer socialization research: Content analysis of post-1980 studies and some implications for future work. In Advances in Consumer Research, 17, 798-803.

Wilkie, W. (1988) The marketing context of consumer choice. In Maynes, E.S. et al., The Frontier of Consumer Research, Proceedings of the International Conference on Research in the Consumer Interest, 317-326.

Should We Ask or Watch?
Data Collection Methods for Researching Young Consumers

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The economic impact of young consumers increases each year as do the marketing activities to influence this spending. Research efforts to create and implement consumer education programs and public policies need to consider the research setting, interviewer influence, and verbal limitations when selecting a data collection method.

Consumers between the ages of 5 and 12 influence over $70 billion of annual spending in our society (Berry 1990; Newcomb 1990). This includes both what they spend, and what is spent on them. Because of this fact, marketing researchers have taken extensive efforts to investigate the behaviors, motivation, and interests of this market segment. These young consumers receive a constant barrage of promotions and product offerings in the form of:

* television programs featuring characters associated with various products (toys, food, clothing, videos, and audio tapes);

* in-school promotions including magazines, teaching materials, and news programs with advertising;

* product placements in motion pictures; and

* "kid's clubs" that promote memberships, emphasize mail order selling, and create mailing lists for sale to other marketers ("Selling America's Kids 1990).

To counteract these marketplace influences, consumer affairs specialists, educators, and policy makers should consider research activities to determine and promote educational alternatives, health and nutrition, and informed marketplace decision making.

The process encountered when researching young consumers can involve three audiences:

1. the young consumers,
2. parents and legal caretakers, and
3. supervisors of young consumers (teachers, scout leaders, and community workers).

Since all three groups can provide insight into the target audience, this paper will consider each as part of the research environment for young consumers; in addition, this paper has the following purposes:

* to review the procedures and concerns associated with collecting research data from young consumers.

* to provide guidelines for planning research with young consumers.

* to suggest research for assessing and planning marketplace decisions, educational programs, and public policies.

What Do We Want to Know?

Data for researching young consumers generally fall into three categories:

1. Attitudes related to marketplace influences (such as advertising) and product offerings (including product performance).
2. Behaviors concerning buying habits, media usage, and product consumption.
3. Influences on behaviors that come from the young consumer's household, peers, educational/community involvement, and the marketplace.

Types of Data Collection Methods

As with any research study involving consumer attitudes, behaviors, and influences, generally accepted data collection methods would include the following:

1. Observations. Planned watching activities may occur in both a structured manner (including quantitative analysis of behavior frequency) or with an anecdotal format to gain understanding of the decision-making environment of young consumers. Atkin (1978) provided a strong framework for the former of these approaches, while ethnographic research designs can be the basis for the latter (Fine and Sandstrom 1988).

2. Surveys. Questionnaires may be used with varying degrees of success depending on the age, audience, and data needs of the study. Rossiter (1977) validated a scale for use with children when studying attitudes related to commercials.

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3. Individual and Group Depth Interviews. In-depth personal interviews and focus groups have been used with varying levels of success depending mainly on the age of respondents. Harrigan (1991) provides strong evidence for this method indicating that one-on-one interviews were used most frequently by organizations involved in children's research. She further points out that mini-focus groups (with three to seven young consumers) were the next most popular technique. This group size is in contrast to the more commonly used 8-to-12 person focus group for other consumer segments.

4. Projective Techniques. Psychological data-gathering devices such as word association, sentence completion, story creation, and third person techniques can be helpful for gaining insight into attitudes and motivations of young consumers. Haire (1950) suggested that projective research methods are useful for revealing motives that may be incapable for a respondent to verbalize. Among young consumers, these techniques can be used to assess brand awareness, animated character perceptions, and role understanding (Marketing News 1983).

5. Diary/Journal Data Records. While having mixed reviews concerning validity of data, diary studies can be especially helpful when researching parents and youth supervisors (Isler, Popper, and Ward 1987). This technique has also been successful with adolescents.

6. Content Analysis. The monitoring of commercials, promotional messages, and other marketplace influences can provide important background and insight of the buying environment of young consumers (Atkin 1977).

Factors Affecting Data Collection Methods

Selection of a specific data collection method to use when researching young consumers will be influenced by:

1. Research topic, data needs. Exploratory studies are likely to be best served by qualitative methods such as unstructured observations, open-ended interviews, and projective techniques.

2. Age of respondents. As previously mentioned, verbal interactions (necessary in surveys) or writing skills (required in a diary study) may not be possible for children under a certain age.

Data Collection Issues

The unique situations involved with researching young consumers gives rise to several concerns that need reconciliation when planning and implementing a study. These issues include:

1. Cognitive Limitations. As Rust (1991) suggests:

- adults can think about themselves objectively; children can not;
- adults can consider alternatives in parallel; children use "serial processing;"
- adults often plan purchases; children's intentions are likely to dissolve in seconds; and
- adults focus on product attributes; children understand products as entities.

2. The Research Environment. A lab setting can seem very foreign to the participant, resulting in nonvalid responses. In contrast, a natural setting (home, school, youth activity location) that is familiar to the young consumer may reduce one's ability to generalize the findings, but the insights gained can more than justify this action. Also, when children are put in a research setting designed for adults (such as one with furniture for grown-ups) the young consumer is less likely to provide valid data.

3. Interviewer Influence. Young consumers are easily intimidated by an adult; respondents must be made to feel comfortable with the researchers with whom they have contact.

4. Ethical and Legal Concerns. Permission of parents or guardians along with confidentiality of data are two areas that require care in the planning stage of a study.

5. Validation of Data Collection Instruments. Procedures must must be established that certify the desired measurement as well as consistency of a questionnaire or observation form.

6. The Response-Behavior Link. While a problem in most types of respondent-centered research, the gap that exists between survey replies and marketplace behavior must be carefully considered when attempting to generalize results or when designing program to improve decision making among young consumers.

7. Interpretation of Responses. The frame of reference used by researchers to draw conclusions from data must also be tempered in light of the perspective, evolving values and behaviors, and physiological changes occurring in this target audience.

Data Collection Selection Guidelines

In the process of planning an investigation involving young consumers, direction may be taken based on the data that will best serve the goals of a study. For example, several types of data (related to desired informational outcomes) may be offered along with suggested data collection approaches, as follows:

For YOUNG CONSUMERS....

...when marketplace behaviors, product use information is desired, use either structured or unstructured observation.

...when media habits, attitudes, or preferences are measured, use a survey or personal interview.

...when an in-depth discussion of behaviors and attitudes is required, use a focus group.

...when determining the types and frequency of commercials and promotional messages, use content analysis.

For PARENT AND LEGAL CARETAKERS, SUPERVISORS of young consumers (teachers, scout leaders, community workers)....

...for determining parent-child interactions, use observational research.

...for measuring attitudes, behaviors, and knowledge, use survey research.

...for listing shopping patterns or media habits, use a diary.

...for assessing promotional messages aimed at parents and supervisors of young consumers, use content analysis.

Research Applications

In an effort to influence consumer education programs and public policy decisions that can help to balance strong marketplace influences, suggested research involving young consumers can include:

1. Studies to determine messages that will effectively promote nutrition, wise shopping, and other desired consumer behaviors; for these, consider the use of surveys and group interviews.

2. Studies to monitor media and messages that are likely to influence behaviors of young consumers; for these, consider the use of content analysis and media habit surveys.

3. Studies to assess the relative influence of parents and children upon each other in buying decisions; for these, consider in-store observations.

4. Studies to assess the influence of teachers, peers, and community environment on attitudes and behaviors of young consumers; for these, consider surveys and ethnographic observation.

References

Atkin, Charles K. (1978) Observation of parent-child interaction in supermarket decision-making. Journal of Marketing, Oct., 41-45.

Atkin, Charles and Heald, Gary (1977) The content of children's toy and food commercials. Journal of Communications, Winter, 2-11.

Berry, Jon (1990) Did marketers overhype the kids' market? Adweek's Marketing Week, December 10, 18-19.

Fine, Gary Alan and Sandstrom, Kent L. (1988) Knowing children: participant observation with minors. Newbury Park, CA: Sage Publications.

Haire, Mason (1950) Projective techniques in marketing research. Journal of Marketing, 14 (April), 649-656.

Harrigan, Judy A. (1991) Children's research: where it's been, where it is going. Advances in Consumer Research, 18, 11-17.

Isler, Leslie, Popper, Edward T., and Ward, Scott (1977) Children's purchase requests and parental responses: results from a diary study. Journal of Advertising, Oct.-Nov., 28-35.

Marketing News (1983) Projective research techniques extract valuable market data from children. 17, Jan. 21, 19-20.

Newcomb, Peter (1990) Hey dude, let's consume. Forbes, 126-131.

Rossiter, John R. (1977) Reliability of a short test measuring children's attitudes towards TV commercials. Journal of Consumer Research, March, 179-184.

Rust, Langbourne and Hyatt, Carol (1991) Qualitative and quantitative approaches to child research. Advances in Consumer Research, 18, 18-22.

Selling America's Kids (1990) Mount Vernon, NY: Consumers Union Education Service.

Money Management Information and Financial Resources of Teenage Consumers in Kansas

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Introduction

While adolescents comprise an increasingly smaller proportion of the national population, their economic behavior still remains of interest. Adolescents yield enormous impact in the economy. They tend to be the major decision makers on an estimated $70-80 billion of annual expenditures. Today's adolescents purchase many of the products intended for their family's consumption. And about $50 billion is available annually to teenagers for their discretionary spending or saving (Hauser, 1986; Walsh, 1985). During their adolescent years individuals acquire much of the financial knowledge and skill to carry them into their adult years. Yet little is known about where and how adolescents acquire their financial background.

Purpose and Method

There were two objectives for this study. The first objective was to determine the magnitude and sources of financial resources available to Kansas teenagers in 1990. The second was to ascertain how adolescents acquire their understandings of money management.

Data for this study were gathered through a written survey distributed to high school seniors enrolled in a government course during Spring,1990. A stratified sample was obtained to represent the five geographical areas of the state, rural and urban communities, as well as small, moderate and large schools.

Results and Implications

A total of 1479 usable responses were obtained from 34 high schools within Kansas. The median amount of weekly spending money available to Kansas teenagers was $60, with males having more ($65) than females ($55). The majority (85.3%) of respondents earned at least a portion of their income, with 58 percent having regular jobs. The average teenager earned 85.7 percent of his available spending money and parents provided 9.8 percent. Half of the respondents indicated their parents provided spending money upon request and 19 percent received a regular allowance. Other sources of income, which accounted for 4.5 percent of total resources, included amounts from other relatives, investment income, or child support. Working teens had significantly more spending money ($70) available than did non-working teens ($15).

The magnitude of resources available to today's youth should be of interest to more than marketers. The vast difference between the discretionary income of working and non-working teens needs more careful scrutiny in future studies.

Over 90 percent of respondents indicated parents/family as a source of their money management knowledge. One-third of the respondents also cited a class at school as a source of financial information with business, economics, and home economics courses most frequently mentioned. While it is not surprising that adolescents learn about managing money from parents and family, the evidence of this informal transmission of knowledge and skill on such a vital topic encourages the development of programs to support parents in their role of financial educator.

References

Hauser, G. (1986). How teenagers spend the family dollar. American Demographics, 8, 38-41.

Walsh, D. (1985). Targeting teens. American Demographics, 7, 21-41.

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Profiles of Consumers and Those Who Recycle

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Rationale

The research is philosophically encompassed with a view of the consumer as part of an ecosystem. This perspective provides a structure for research activities that explore consumer attitudes, values, and practices that affect global environments and resource conservation, particularly recycling. Recycling helps minimize the economic and environmental consequences of consumer waste and consumption itself. Waste management is considered a concern of the current decade (Mikitka, Zeitler, & Gross, 1984; U.S. Environmental Protection Agency, 1989).

Research Objectives

The objectives of this study were to gauge identification of a widely used recycling symbol and to obtain profiles of household consumers and those who recycle.

Respondents

Respondents were 440 strategically selected supermarket shoppers and recycling center patrons from a major suburban area in the USA. Previous research suggested that class division may influence recycling attitudes and behaviors. Therefore, social class ranks for respondents were determined using the Hollingshead Index of Social Position (Mikitka, 1987).

Findings

Awareness of the recycling symbol increased from one-tenth of the respondents in early surveys to one-third of the respondents in the most recent surveys. There were no significant differences in the rate of recycling (i.e., the percent who recycle) among different social class categories. However, there were some significant differences* in what respondents did with recyclables. Respondents with lower social class ranks were more likely to receive money (64% vs 29%) and upper class respondents were more likely to give them away (39% vs 10%). About one-third of all the respondents who recycle receive money for some of their materials and give away some of their recyclables. The middle social class group was more significantly inclined to recycle for ecological reasons (64% vs 25-53%). Lower class respondents groupings were much more inclined to recycle for money (85%) and the upper classes for charity (30%). When respondents were asked "What is the most important reason for recycling?," 46% identified ecological or environmental reasons, 34% monetary reasons, and 19% charitable reasons. The general differences between social class groupings remained.

*Multivariable Chi square analyses significant at .05 or better.

Implications

A framework for developing environmental concepts may be associated with the Mobius loop recycling symbol that emphasizes total systems. The research lends support for consumer education and environmental programs that aim at creating awareness of the recycling symbol and its significance. Programs should be based on environmental affective objectives as prerequisite to learning environmentally beneficial decision-making practices. Demographic profiles of household consumers may be useful in further expansion and penetration of consumers, retailers, manufacturers and industry markets for recyclables in the 1990s.

References

Mikitka, K.F. (1987, September/October). Recycling symbol research. Resource Recycling: North America's Recycling Journal, 6(2), 32-34, 47.

Mikitka, K., Zeitler, J., & Gross, A. (1984, July/August). Recycling symbols. Resource Recycling: Journal of Recycling, Reuse, and Waste Reduction, 3(3), 16-18.

U.S. Environmental Protection Agency, Policy Planning and Evaluation, Solid Waste and Emergency Response. (1989). Recyclability in the marketplace (EPA 530-SW-89-066). Washington, DC: Author.

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Testing A Computer Program for Life Cycle Savings

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Computers have the potential of helping consumers with complex financial decisions but little testing and evaluation has been conducted with sophisticated software. This poster session will report on a test of software users.

Rationale

To give additional assistance in planning for retirement, a computer program based on the economic theory of life cycle savings was developed. The program was intended for consumers who are at least ten years away from retirement. Many individuals have a tendency to increase their level of savings in the years just prior to retirement when the demands of raising and educating children and purchasing a home have been accomplished. However, the program allows for the especially thrifty consumer who begins saving early to change the values of several variables including the "thriftiness" factor. The full model is described elsewhere (Hanna, 1989).

Potentially confounding factors in implementing the model include: overestimation of future income and pension by young consumers, few households purchase an annuity at retirement, and consumers may have difficulty in thinking about income and consumption in real terms. The program assumes that an annuity will be purchased to fill the gap between optimal consumption, pension, and Social Security benefits. While all dollar amounts (current and future income, personal loans, and net worth additions and withdrawals) are entered in terms of today's dollars, the projected consumption and savings may be observed in both real and nominal dollars.

Students in a Family Resource Management Application class tested the Life Cycle Savings program by writing a case study and focusing on a decision about family formation or consumption and its effects on savings over the life cycle. A pre-test and post-test with fourteen items was administered. Attitudes toward the use of a computer program as a means of generating financial advice as well as specific features of the program such as Constant Dollar Planning and the thriftiness level were analyzed. A significant increase in students' ability to make decisions about how much to save for retirement was noted in the survey results.

Findings

Forty-five students participated in the exercise but only 37 students completed both attitude surveys. The mean age of the students was 22.8 years. The mean hours worked per week by students was 13.3. However, 15 students were not employed and only 2 students worked full-time. Five students were married, 1 was divorced, and 38 were single. Only 2 students were parents. An entry level financial management class had been completed by 75 percent of the students.

Each group of students assumed that both spouses would be employed. The mean take home income with both spouses employed was $41,700. Beginning retirement assets averaged $27,800 while beginning loan balances averaged $20,800. The mean starting age for the savings program was 26 with a mean retirement age of 63. Mean annual growth rate of future income was 2 percent with a range from 1 to 4.25 percent. The mean take home income at retirement was $89,900.

Decision groups consisted mostly of pairs. In addition, a few groups made multiple decisions such as varying the retirement age and deciding whether or not to have children. Retirement age and children (when to have them, child versus no child, and one child versus two) were the decisions receiving the most emphasis.

References

Hanna, Sherman, (1989). Optimal Life Cycle Savings, Personal Finances in the 90s: Implications for Professionalism, Association of Financial Counseling and Planning Educators, 4-16.

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Mail-Order Use and Problems: Differences by Age

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Purpose

This study explored the use of information, knowledge of selected consumer rights, and perceptions of fair and legal business practices of a sample of 1,019 persons age 25 years old and older (566 who had made purchases via mail in the last six months and 453 who had not). It also examined the actions taken by 254 persons who indicated that they had a problem with a mail order purchase. Three age categories were used: 25 to 43 years old (babyboomers), 44 to 64 years old (inbetweeners), and 65 years old and older (elderly).

Methodology

The data used in this study were taken from a 1989 telephone survey of consumer behavior conducted by Market Facts for the American Association of Retired Persons (AARP). Responses to questions on use of information from the Better Business Bureau (BBB) or consumer protection agencies, consumer magazines, articles or books about a product or service, past buying experiences, sales person's advice, family or friend's advice, and advertising were analyzed. Also, each group's knowledge of one's right to have several days to cancel a purchase made from a door-to-door sales person, knowledge of one's right to cancel a mail order if not sent within one month of being ordered, and opinion of the fairness and legality of selling a product different from the one pictured in the mail catalog were analyzed.

Among those who indicated that they had a problem with a mail order purchase (product did not look like the catalog picture), the responses to the following complaint procedures were examined: keep the product, return the product and request a refund, write a letter to the company expressing dissatisfaction, and complain to a consumer agency.

The Chi-Square test of independence was used to analyze the data. Gamma was used to indicate the strength of association when Chi-Square was significant.

Results

Among those persons who indicated that they order products or services via mail, there were significant associations between age and all sources of information except sales person's advice and family and friend's advice. The babyboomers were more likely to use these sources of information and the elderly were less likely. These significant associations also held for the group who said they had not made purchases via mail in the last six months. However, family and friend's advice was also significant for this group.

There was a significant association between age and knowledge of one's right to have several days to cancel a purchase made from a door-to-door sales person among those who had made purchases via mail. The babyboomers were more likely to correctly answer that one has several days to cancel a purchase made from a door-to-door sales person and the elderly were less likely. This significant association also held for the group who said they had not made purchases via mail in the last six months. However, the inbetweeners were more likely to answer correctly and the elderly were less likely.

There was also a significant association between age and perception of the legality of selling a product through mail that looks different from the one pictured in the catalog among those who had made purchases via mail. The elderly were more likely to correctly answer that it is illegal to sell a product through mail that looks different from the catalog picture and the inbetweeners were less likely. This significant association also held for the group who said they had not made purchases via mail in the last six months. However, the inbetweeners were more likely to answer correctly and the elderly were less likely.

There was no significant association between age and complaint behavior.

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Consumer Credit : An Exploratory Study of Search Behavior

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This study applies Stigler's economic of information model to the external search for consumer credit and explores factors associated with diverse consumer search behavior. Logistic regression was used in empirical analysis of a sample from the 1983 Survey of Consumer Finance. The variables SIZE OF LOAN, and EDUCATION were positive related to search. INCOME had a curvilinear effect on search.

Information search has been the focus of numerous research studies in the past. However, there have been few studies of the search process for services. The characteristics of consumer services are different from those of tangible goods, as are the contributions of different information sources to the decision process for services. This study applies Stigler's economic model to the external search for a service -- consumer credit -- and seeks to explore factors associated with consumer search behavior.

Model

Stigler's economics of information model implies that a consumer will search for lower prices as long as the marginal costs of additional search are less than the expected marginal benefit from search (1961).

Methodology

Data came from the 1983 Survey of Consumer Finance (the latest survey year available with such information). The sample used consisted of those who purchased over $500 by loan in the previous year, and had not been rejected by credit in past few years resulting in 574 households selected from the original 3,824 respondents. So few consumers had considered search beyond a second lender that the dependent variable used was a dichotomous variable, whether the consumer had considered any search for information about an installment loan. A logit function was specified as follows:

SEARCH = f(SIZE OF LOAN, INCOME,
EDUCATION, AGE, PRIOR EXPERIENCE,
TIME SCARCITY)

Six independent variables are specified as dummy variables. It is hypothesized that SIZE OF LOAN and EDUCATION have positive effects on search, INCOME, AGE, PRIOR EXPERIENCE, TIME SCARCITY have negative effects on search.

Results, Conclusions, and Implications

The results revealed that consumers still engage in little information search although "more information is better" has been emphasized for over two decades. The SIZE OF LOAN has a significantly positive effect on credit search, indicating the economic model of information is valuable for service information search analysis. The curvilinear income effect, however, suggests that middle-income consumers search more than lower and higher income consumers because they have a higher demand for credit than lower income consumers and a lower search cost (foregone wage rates) than those in higher income level. The strongly positive EDUCATION effect further indicates that for such a complicated commodity as credit, more investment in human capital may increase the efficiency in search, leading the consumer to search more. One implication of these results is that disclosure mandated by "Truth in Lending" may not benefit poorly educated consumers. Greater efforts in consumer education may be needed. Future analyses in service information search studies may also need to extend the model to include other types of services to determine if the results observed in this study are consistent with those for other services.

References

Chang, Y.C. (1990). Consumer credit: an exploratory study of search behavior. M.S. thesis (unpublished), Ohio State University.

Stigler, G.J. (1961). The economics of information. The Journal of Political Economy, LXIX, 213-225.

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Wife's Employment and Service Expenditures

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The working wife has become an integral part of the American economy. In 1987 both husband and wife had earnings in over two-thirds of the 43.5 million married-couple families with at least one spouse employed ("Earnings of Married Couple Families," 1989).

Since time is a fixed resource, dual-earner families have fewer hours for nonmarket activities than comparable one-earner families. For this reason, they may have to purchase time-saving goods and services as substitutes for household production time taken up by market work. The purpose of this research is to examine the relationship between a wife's employment and outlay on services for which demand is expected to be sensitive to the value of time within a household.

Methodology

The interview component of the 1986 Consumer Expenditure Survey (CEX) was the data base for this research. The study sample consisted of married-couple families in which the wife was less than 65 years old and in which neither spouse was retired. Families not reporting information on income and other sociodemographic characteristics of interest were excluded, resulting in a sample of 1,000 families.

Multivariate tobit regression analysis was used to examine the influence of wife's employment and other factors on outlay on selected services. The services examined were 1)food away from home, 2)child care, 3)domestic services, 4)clothing care, 5)personal care, 6) gardening services and 7)total services. Independent variables of interest were 1)family income, 2)wife's employment status, 3)wife's education, 4)wife's age, 5)wife's race, 6)family size, 7)family composition and 8)homeownership status. Region and Metropolitan Statistical Area (MSA) status were also employed as controls.

Results

Family income was positively associated with all dependent variables except child care. Families of wives employed both full- and part-time spent more on child care and total services than families of full-time homemakers. Families of part-time working wives spent more on food away from home compared to families of full-time homemakers, but no difference was found for families of full-time working wives.

Higher levels of education were positively associated with all service expenditures. The impact of the age variable indicated the presence of distinct life-cycle effects.

Families of black wives were found to spend less on food away from home and gardening services, but more on personal care than families of white wives. Families of wives of other races spent less on personal care than families in the reference category.

Neither family size nor family composition proved to be major explanatory variables and were only significant in explaining expenditure on child care. Homeowners spent more on domestic services, but less on clothing care relative to renters; no difference was found for the remaining categories.

Conclusions

Wife's employment was influential in explaining expenditure on food away from home, child care and total services only. Contrary to what might be expected, only families of part-time employed wives spent more on food away from home. Findings indicate that factors not associated with wife's employment were more influential in explaining expenditure. For example, family income had a positive influence on all categories except child care. Education and age were also influential.

It should be noted that the CEX did not provide information on service price and availability, both of which could play a major role in spending, particularly for domestic services. For this reason, future research on service consumption should take these factors into account.

Reference

"Earnings of Married Couple Families." (1989) Family Economics Review, 2(4), 27.

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Organic Produce: Consumer Attitudes and Willingness to Pay

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Today's consumers are more informed about health and nutrition, and are asking more questions and expressing concerns about food quality and product safety. The growing interest in nutrition and food safety has contributed to an outgrowth of the organic produce industry (Franco, 1989). However, sales of organic produce at some retail markets have been minuscule due to inconsistent quality and higher price (LaRue, 1989). The objectives of the study are to assess consumers' food concerns with respect to use of chemicals in fresh produce production, and their motivations, attitudes and willingness to pay for organic produce.

Data and Methods

A self-administered mail survey was conducted in the summer of 1989 among 580 households participated in the Georgia Consumer Panel. The panel constitutes a random sample of Georgia consumers stratified by income classes. The survey resulted in 389 completed questionnaires, a response rate of 67%. The sample tended to be demographically upscale with older, better educated, and higher income households slightly overrepresented. The average household size is about 2.7 persons. Female, city residents, and people of European origin represent 69%, 54% and 77% of the survey respondents, respectively. Cross-tabulations and Chi-square test were used to analyze and determine if differences in responses exist among socioeconomic and demographic subgroups.

Findings

The respondents most frequently chose pesticide use (45%), chemical food additives and preservatives (31%), food poisoning (29%), and high food prices (26%) as one of their top three food concerns. These food concerns were statistically significant between those who indicated a preference for organic produce and those who did not. Sex, age and educational level correlated significantly with these food concerns.

Results suggest that 61% of the respondents would prefer to buy organic produce, if available. However, this preference was invariant of gender, race, age, education or income of the respondents. The most important reason that consumers said motivated them to prefer organic produce to conventionally grown produce was freedom from chemical residues (38%). Other important reasons for choosing organic produce were naturally grown (35%) and tasting better (16%). A majority of respondents (61%) indicated that they would only pay up to 10% higher than what they were paying for conventional produce. While some (15%) would pay a premium greater than that, 24% of them were unwilling to pay any higher price. Furthermore, only 25% of the potential buyers would accept organic produce with low appearance and sensory qualities such as insect damages, blemishes, or soft spots.

Conclusions and Implications

The results did not suggest any direct correlations between socio-demographic variables and the groups of consumers who would and would not buy organic produce. However, sex, age, and levels of education and income were statistically significant determinants that affected consumers' food concerns and fresh produce purchasing decisions. An important factor to the marketing potential of organic produce in Georgia appears to be some certification that these produce are free of chemical residues. Furthermore, organically grown produce should be made available to consumers at a reasonable price that is competitive with those grown by conventional methods, and without apparent defects in its sensory quality.

References

Franco, J. (1989). An Analysis of the California market for organically grown produce. American Journal of Alternative Agriculture. 4(1):22-27.

LaRue, C. P. (1989). Organic' strength wanes at retail: Look, price blamed. The Packer. September 2.

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Management and Involvement Factors Related to Financial Satisfaction

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The study identified management and involvement factors related to husbands' and wives' financial satisfaction. A random sample of 110 dairy farm couples were interviewed. Multiple regressions, with t-tests, were used. Two risk management and three involvement factors were related to the husbands' or wives' financial satisfaction.

The purpose of this exploratory study was to identify financial management and decision and work involvement factors related to husbands' and wives' financial satisfaction. Such factors are throughputs in the Deacon-Firebaugh management model (1988) and were related to an evaluation of the output from management.

Related Literature

Gap theory explains the concept of satisfaction as the difference between one's desired and actual situation. Financial satisfaction has been measured in various ways; there is no consensus on measurement (Davis, 1986). Previous research has identified a number of financial resource input factors and demographics which are related to financial satisfaction. The few throughput factors identified to date include being a planner and decision-making equality (Heck, 1983).

Methods

The population studied was dairy farm couples in five Utah counties. A stratified random sample was drawn. Two-person interview teams conducted separate simultaneous interviews with husbands and wives in 1986. A sample of 110 cases was analyzed; the response rate was 71%.

Variables. Financial satisfaction was an index of satisfaction with financial security, family income, and level of consumption. Money management and risk management factors were individual questions; decision involvement and farm work involvement factors were indexes.

Analysis. Money management, risk management, decision and farm work involvement factors were entered in separate multiple regressions for husbands and wives. The regressions controlled for all other factors in the equations while testing the hypotheses that each individual factor was related to financial satisfaction. T-tests determined statistical significance. Probabilities of .10 or less were considered significant.

Sample Description. The mean age of husbands was 51.0. The modal category of education was high school graduation for husbands and vocational school or some college for wives. The mean number of children under the age of 19 living at home was 1.65. Over 60% of husbands and wives were not employed off the farm. Net 1985 farm income was low; 26% had a net loss and 36% netted less than $10,000. However, only 20% had net 1985 family incomes of less than $10,000. The mean debt/asset ratio was 33.

Results, Discussion, and Conclusions

In the husbands' equation, two risk management and two involvement factors were statistically significant. Those risk management factors were life insurance on both husband and wife, and health insurance coverage judged "good" in adequacy. Significant farm work involvement factors were runs errands, and, inversely, prepares taxes. Only one factor was related to the wives' financial satisfaction, involvement in day-to-day family spending decisions.

Discussion. As in previous studies, few throughputs related to financial satisfaction were identified. However, 2 risk management factors were related to the financial satisfaction of husbands. Three decision or work involvement factors were related, although one had an inverse relationship. Noninvolvement is contrary to managerial theory; perhaps such theory needs to address unpleasant work.

Conclusions. Basic money management activities were not related to financial satisfaction; perhaps this is why few people prepare budgets, keep spending records, and use these tools to control spending. Insurance purchase may be motivated by its relationship to financial satisfaction. Involvement in decision-making and work, two widely recommended managerial strategies did receive some support in this study.

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Factors Relating to Spousal Financial Arguments of Louisiana Urban Consumers

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This study was conducted to determine frequency of spousal financial arguments as related to use of financial management strategies, perceived financial satisfaction, and selected demographic variables.

Introduction

Financial arguments are likely to cause disruptive and stressful family conditions. The focus was to determine the frequency of spousal financial arguments of urban Louisiana consumers, with emphasis on relationships between frequency of arguments and a) utilization of financial management strategies, b) perceived financial satisfaction, and c) selected demographic variables.

Methodology

Questionnaires were mailed to Louisiana residents--115 from each of 7 cities--randomly selected from a Louisiana Department of Motor Vehicles list. From the sample of 224 consumers (36% of the deliverable questionnaires), 133 (59%) were married. The data were analyzed using factor analysis with varimax rotation, analysis of variance with covariates, and correlations.

Results and Discussion

Fifty-one percent of the married respondents indicated spousal financial arguments. Of these, 5% reported "usually" arguing, 22% reported "sometimes" arguing, while 24% reported "seldom" arguing.

Two strategies, goals/savings and record keeping, were negatively related to arguing, indicating that respondents using these strategies were less likely to argue about finances. Arguing increased with the use of apparel cost cutting, delaying tactics, and do-it-yourself techniques/allowance strategies (see Table 1). Underlying financial difficulties may have prompted the use of delaying tactics.

Table 1
Spearman Correlations Between Frequency of Spousal Financial Arguments and Utilization of Financial Management Strategies

	Arguments
Factor	rho
Goals and savings	-.281**
Record keeping	-.245*
Delaying tactics	.278**
Apparel cost cutting	.211*
Controlling expenditures	-.159
Financial statements	-.060
Do-it-yourself & allowance	.216*
Cost cutting techniques	.091
Communication regarding budget and goals	-.034

Note. N = 88. A negative estimate indicates a positive relationship since 1 = usually and 4 = never.
* $p < .05$
** $p < .01$

Financial arguing decreased as respondent's age increased (see Table 2). Spouses may have reached financial compromises during their younger years, resulting in less arguing in later life.

Table 2
Analysis of Variance with Covariates for the Relationship between Frequency of Spousal Financial Arguments and Selected Variables

	Frequency of Arguments			
Variable	df	MS	F	Est.
Age	1	8.86	11.42**	0.03
Sex	1	0.46	0.60	
Employment	1	0.32	0.42	
Education	1	0.26	0.33	-0.04
Size of household	1	0.57	0.73	-0.08
Income	1	0.20	0.25	0.02
Perceived income adequacy	1	0.67	0.86	0.12

Note. Error = 72. Estimates available for continuous variables only.
** $p < .01$

Financial satisfaction was related to spousal financial arguments (rho = .269, $p < .01$, N = 120). Less satisfied respondents had more financial arguments than than those who were more satisfied.

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Money Management Education...It Works

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Nevada Cooperative Extension's development and implementation of the Money Works Program was in response to the economic challenges facing families from changing employment opportunities, eroding purchasing power, income instability and lack of financial management skills.

The program is a series of seven two-hour classes, addressing values, goals and decision making, financial statements, spending plans, credit management, risk management, saving and basic investing, and retirement planning.

The target audience included families and individuals having limited knowledge and experience in managing their finances. Marketing efforts strongly encouraged partners to attend together. The workshops were limited to 20 participants in order to provide interactive instruction.

Program Objectives

Through participation in the Money Works Program, participants were to: strengthen their understanding of how values are related to family financial goals; develop a plan for reaching financial goals; develop and use financial management tools such as spending plans and financial statements; gain control over their financial situation; and develop the ability to analyze their debt situation, improve their management of credit and reduce their debt load.

Accomplishments

Prior to the time of impact evaluation, three classes had been conducted with a total of 44 participants. The six month impact assessment had a 64 percent response rate. The evaluation instrument included 29 questions, 21 of which assessed financial accomplishment which resulted from participation in the program. Don A. Dillman's Total Design Method (TDM) for mail surveys was utilized.

The assessmented indicated: 67 percent had prepared an income and expense statement; 62 percent had completed a net worth statement; 44 percent had developed monthly spending plans; 38 percent had initiated a planning calendar for periodic and seasonal expenses; 56 percent had improved their ability to balance spending with income; 96 percent were more in control of their finances; 52 percent strengthened their understanding of how values are related to family financial goals; 39 percent developed a plan for reaching financial goals; 81 percent analyzed their debt situation, reduced debt load, and increased their ability to manage credit.

Continuing Developments

Since the initial implementation of the Money Works Program, professionals from social service agencies, utility companies, casino human resource departments, and others have been invited to participate. Staff training and on-site employee workshops have also been conducted. This variety of approached has expanded the ability to reach audiences who are not traditionally information seekers and provided a blend of prevention and intervention programming.

Observation and evaluations indicated that offering all topics in the series resulted in participant information overload. The beginning level of skills needed to be learned and applied before participants were ready to move on to the next level.

Consequently, the program has been divided into two components, Money Mechanics and Money Works. Money Mechanics focuses on goals, values, decision making, spending plans, credit management, record keeping, financial statements, and saving. In Money Works, the emphasis is on risk management, investing and retirement planning.

Implications

The decade of the 80's has been described as the decade of rising income inequality. The decline of real wages among young workers is expected to continue. Consequently, programs such as Money Works, which have a proven impact on the financial management skills of program participants, will need greater accessibility.

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Women's Participation in an Employer-Sponsored Pension Fund

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Retirement strategies of women may differ from men's. Women are likely to have lower Social Security benefits due to weak labor force attachment and low wages, and are less likely to participate in an employer-sponsored pension fund (Woods, 1989). Women in professional occupations were more likely to contribute to a pension than women in non-professional occupations. Married women were less likely to contribute to a pension than single women (Price-Bonham & Johnson, 1982). While the purpose of the survey was to explore employees' participation in the university's pension plan, the results presented focus upon the female employee respondents.

A random sample of benefits-eligible faculty, professional/administrative/technical (PAT), and operating staff (OS) at a northeastern university were sent a short questionnaire through campus mail. One hundred forty-two or 46% of the respondents were female. Chi square test of independence and t-tests were used to determine if the participation by women in the pension system differed based on demographic and personal factors.

Thirty percent of the female respondents were faculty, 29% were PAT's and 40% were OS's. The average age was 40.9 years (sd=10.69) and ranged from 21 to 66 years. Median level of family income was $35,000-40,000 per year. The proportion of the total family income earned by the married women ranged from 7% to 100%, with a mean of 47.1% (sd=21.8).

The women differed significantly in their pension participation based on whether they were faculty, PAT, or OS (χ^2=20.703, p=.0004). A significant difference was also found by family income (χ^2=28.209, p=.0133), and by whether they or their spouses had an IRA, 401-k or 403-b plan (χ^2=8.807, p=.0320). No differences were found by marital status.

T-test revealed a significant difference between the ages of the participants and non-participants (t=5.20, p=.000). While there was no difference between the level of satisfaction with their own ability to manage money, there was a difference between the participants' and non-participants' satisfaction with their economic position (t=2.75, p=.007).

Because the literature indicated that married women might take a more lackadaisical attitude toward their own pension rights, several analyses were done using responses from only married respondents. The factors examined were spouse's employment, his pension participation, and the proportion of income earned by the women. There were no statistically significant results.

Confirming the findings of prior studies, three-fourths of the faculty and PAT women were participating compared with 43% of the operating staff women. These findings were similar to those of prior research. Women with higher incomes were more likely to be participating than those with lower incomes. When asked why they were not participating, the most frequent response was "could not afford it" (30%). Those who participate in the pension fund are likely to be more concerned about retirement in general, so it is not surprising that more participants also have an IRA or other pre-tax retirement savings plan than non-participants, confirming Woods' (1989) report. Contrary to the findings of Price-Bonham and Johnson (1982), married women were not less likely to be participating in the pension fund than single women.

References

Woods, J.R. 1989. "Pension Coverage Among Private Wage and Salary Workers: Preliminary Findings from the 1988 Survey of Employee Benefits." Social Security Bulletin, 52 (10):2-19.

Price-Bonham, S. & C.K. Johnson. 1982. "Attitudes Toward Retirement: A Comparison of Professional and Nonprofessional Married Women." In M. Szinovacz (ed.) Women's Retirement: Policy Implications of Recent Research. Beverly Hills: Sage. pp. 123-138.

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Educating Consumers to Take Control of Life and Death Health Care Decisions

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Preserving one's autonomy regarding health care decision making has become a complex issue facing individuals and society. Few resources exist which address the issue from a consumer decision making and family context perspective. Pilot study results of a newly developed self-study approach to the issue are shared.

Medical science has made major advances in life-sustaining technology, enabling individuals to survive illnesses and injuries that were once fatal. These advances create complex dilemmas and decisions regarding life and death for individuals, their families, health care providers, the courts, and society. What happens if an individual is unable to make or communicate his or her preferences or decisions regarding health or personal care? Who decides? How should such decisions be made and on what basis? The purpose of this poster is to highlight the development and impact of an educational resource designed to address this new and critical consumer and policy issue.

Autonomy, or the right to self-determination, is an ethical principle that is generally supported today as a basic consumer right in the health care system. While many consumers are familiar with the need to plan ahead regarding the use and distribution of their property and assets in case they are unable to do so, planning ahead to preserve one's autonomy regarding personal care is a new concept. The 1990 Cruzan Supreme Court case has raised awareness of the need for individuals of all ages to plan ahead for the possibility of not being able to make or communicate one's own decisions.

Planning ahead for decisions about personal care involves sorting out complex legal, ethical, spiritual, and economic issues. While there have been some consumer education efforts to help individuals understand legal approaches (e.g., living wills), few resources exist which address the issue from a broader decision making and family context approach.

Development of an Educational Resource

A four part family focused self-study series was developed by the Minnesota Extension service to help families: 1) gain an understanding of why health care decision making is an important issue; 2) recognize the advantages and disadvantages of various planning options; 3) identify the myths and facts about formal and informal planning options; 4) develop personal perspectives and opinions on health care decision making; and 5) increase skills in communicating about such a sensitive issue. The units which were mailed weekly contained reading material, definition of terms, discussion questions, and worksheets and activities.

Ninety families in four counties piloted the self-study. Anywhere from 1-5 family members participated, for an average of 1.8 individuals including spouses, children, parents, in-laws and siblings. Participants ranged from teenagers to 93 year olds; were primarily female (85%); and a majority had completed high school or some level of higher education. The evaluation process consisted of pre and post profiles of participants, written evaluations of each lesson, and phone interviews to evaluate content, methods, marketing, and assess planning and behavior changes.

Findings

As a result of participating in the self-study, family members: 1) made a point of discussing the issue with family members (73%); 2) decided to informally share viewpoints and preferences (68%); 3) learned about the viewpoints and preferences of those they are close to (63%); 4) improved skills in bringing up and talking about sensitive issues (59%); 5) decided it is important to make some formal plans (living will or Durable Power of Attorney)(59%); and 6) changed attitudes and opinions about health care decision making (54%).

Overall, ratings of both content and methods were consistently very high. The most valuable components of the self-study when rated on a 4-point scale were worksheets and activities and definition of terms, followed by the reading material and discussion questions. A majority of participants rated higher knowledge and comfort levels with the subject matter after weekly participation. An overwhelming number (95%) would encourage others to enroll in the self-study.

Suggested changes in content included more in depth definitions and discussion of medical terminology and options. More time between lessons was requested to allow time for sharing and working through activities.

Conclusions

While the content and methods of the piloted self-study have been important additions to a new consumer issue, varied educational resources need to be developed. Federal legislation passed in 1990 will require all health care facilities receiving Medicare or Medicaid funds to inform patients of their health care decision making rights. Consumer educators can offer much needed family and decision making approaches to such an interdisciplinary issue.

Effects of Different Income Sources on Food Expenditures

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A Tobit model is used to examine the impacts of income sources on food expenditures using BLS's Consumer Expenditure Diary Survey data in 1986. The empirical results show that four income components have significantly different effects on the expenditures of aggregate food, food at home, and food away from home.

The affordability of food to American households continues to be a public issue. There are concerns about adequate nutrition consumed by households and the coverage and high costs of food distribution and assistance programs (West and Price). Transfer payments and food subsidy programs are two major public assistance vehicles to help low income households improve their level of living especially on food consumption. In order to improve the effectiveness and efficiency of various social programs such as the food stamp program, policy-makers need to understand the effects of transfer payments, food stamp program, and selected household characteristics on food consumption.

A previous study of the impacts of various income sources on food consumption was conducted by Hymans and Shapiro (1976). They used a panel data from a five year period and found that various income sources had distinguished impacts on food consumption for different household groups. The magnitudes of marginal propensity to consume food from the food subsidy and transfer programs are higher than those from wages and other income sources. The evidence clearly implies that various income-supplement programs aimed at raising the level of food consumption for the poor was effective. The Hymans and Shapiro's study examined only total food expenditure. Since the component of food away from home has been increasing rapidly during the 1980's, it is important to investigate and compare the effects of various income sources on food consumption at home vs. away from home.

The main purpose of this study is to utilize the recent consumer expenditure survey data for analyzing the impacts of various income sources on total food expenditure, and on the expenditures for food at home and food away from home. The empirical results will provide valuable information for evaluating the effectiveness of the food subsidy and transfer payments programs. For the remainder of this paper, the theoretical framework will be first discussed. The data sources and statistical model are next described. We will then present the regression results, the estimated marginal propensity to consume, and the expenditure elasticities of various income sources. The paper ends with concluding comments.

Theoretical Framework

A demand function, derived from the maximization of a utility function subject to a budget constraint under neoclassical consumer theory, can be specified as:

$$Q = Q(P,X;\gamma(D)) \tag{1}$$

where Q is quantity demanded of a commodity; P is a vector of the prices of all goods; X is household income (or total expenditure); and $\gamma(D)$ is a vector of unobserved preference parameters which are non-stochastic functions of a vector of observed household characteristics D. Household income in Eq. (1) is an aggregate amount which combines all income components. Various income components are considered to be homogenous in the neoclassical demand model.

In this study, we assume different sources of income may affect food consumption behavior differently. In order to test this hypothesis, Eq. (1) is modified and expressed as:

$$Q = Q(P,X_1,\ldots X_n;\gamma(D)) \tag{2}$$

where $\Sigma X_i = X$, and X_i represents i-th income source. It is obvious that Eq. (2) is a more general model than Eq. (1). Equations (1) and (2) would be identical if various income sources have the same impact on consumption.

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For instance, if earned income and food stamp income have identical marginal propensity to consume for food, then these two income components can be, theoretically, combined together as an aggregate income in a demand function. One advantage of Eq. (2) is to permit us to examine whether or not various income sources have any differential effect on consumption.

Further, we assume that Q(.) is a linear function of observed prices (P), income sources (X_i), and demographic variables (D_i). The resulting linear model is expressed as:

$$Q = a + \Sigma\alpha_i P_i + \Sigma\beta_i X_i + \Sigma\gamma_i D_i \qquad (3)$$

where α_i's, β_i's, and γ_i's are parameters to be estimated. Note that Eq. (3) can be considered as a demand function expressed in budget share or expenditure form. Typically, prices are assumed to be the same among households when using the household data in one period. However, in this study, we can relax this assumption because households can be identified on a monthly basis within the survey year of 1986. Therefore, we can account for the effect of price variation using monthly price data. The dependent variable is expressed in terms of expenditures (aggregate food, food at home and food away from home).

Data

The basic data needed for this study including food expenditures, prices and demographic characteristics of households were provided by the Bureau of Labor Statistics (BLS). Specifically, expenditure and demographic data were obtained from the BLS's 1986 Consumer Expenditure Diary Survey while the price data were the consumer price indexes published by the BLS. Note that all data can be identified on a monthly basis. Therefore, the data base is essentially household data spread over a 12-month period.[2]

Data in the diary survey were collected from a national probability sample of households designed to be representative of the national, noninstitutional population. The diary survey was completed by each sample consumer unit for two consecutive one week period. In this study, data on expenditures and income of various sources are all converted to a weekly basis within the month. Expenditure variables include total food expenditure, food at home, and food away from home. Income of a household is divided into four main components: (1) wages and salaries; (2) transfer income including social security benefits and public assistance or welfare; (3) value of food stamps; (4) other income including interests, pensions, dividends, unemployment compensation, etc. In addition, demographic variables such as race, region, family size and family composition are also included as explanatory variables.

Note that food expenditures in the diary survey refer to transaction cost, including excise and sales taxes for goods and services acquired during the survey reference period. The full cost of each purchase is recorded, even though full payment may not have been made at the time of purchase. It is also noted that expenditures incurred by members of the consumer unit while being away from home over night or longer are excluded from the diary survey.

The observations to be analyzed in this study are randomly selected from the public-use tape of the diary survey of consumer expenditure for 1986. Prior to the random sampling, households with negative before tax income were excluded. Table 1 shows a comparison of sample size and sample means between the BLS survey and the random sample selected for the study. The random sample represents the BLS sample very well. The sample size is 2,198 or about 23% of the households in the original survey. The sample mean of total weekly food expenditure is $62.37 per household consisting of $38.57 for food at home and $23.80 for food away from home. The sample mean of total weekly income is $489.42 per household consisting of wages and salaries ($370.64), transfer income ($35.28), food stamp income ($1.69) and other income ($81.81). The transfer income and value of food stamp accounted for only 7.5% of total household income in 1986.

Purchase vs. Consumption

The neoclassical demand model captures the relationship between consumption of a commodity and explanatory variables. Presumably consumption of goods yields utility. A major problem in demand analysis using cross-sectional data is that we only can observe purchases of commodities rather than their actual consumption.

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[2] BLS's consumer expenditure survey data are now available for the entire period of 1980-88. It would be desirable to extend this study to cover this period.

However, the act of purchasing does not itself yield utility. Therefore, for an empirical study, consumption and purchase are usually assumed to be the same. In the case of food, one would expect purchase to approximate real consumption very well because unlike clothing or other durables, food is a relatively perishable good and it is needed on a daily basis. There is a very high frequency of purchases for food. In fact, it is reasonable to assume that for most households, most food items are purchased on a weekly basis.

In the diary survey, expenditures were recorded during a period of one week. If the consumer unit did not purchase any food during that week, there would be no food expenditures. In our randomly selected sample, there are 91 observations, or about 4% of total sample, reported a zero-value for total food expenditure. Furthermore, 9.3% and 22.3% of observations have zero-level expenditure on food at home and food away from home, respectively. While households may spend food expenditures for only at home consumption or away from home consumption, it may be surprising to have zero expenditure for total food consumption. However, in the diary survey, zero food expenditures may occur in several situations. College students may pay their room and board together in the beginning of each semester. Some households may receive meals as a form of pay. Also, some households may just simply did not incur any food expenditures during the survey week. There are still other households who just did not record their food expenditures. Since the households with incomplete record of food expenditures can not be easily identified and deleted, all households with zero food expenditures remain included in the study.

In this study, purchase and consumption are assumed to be identical. A zero-level expenditure is considered as temporary non-consumption during the survey period. Therefore, we have a case of truncated dependent variable to deal with in estimation.

The Tobit Model

The appropriate technique for estimating a structural model with a limited dependent variable (i.e., non-negative constraint) is to use the censored regression model. This model was first introduced by Tobin (1958), and has became widely known as the Tobit model.

As discussed in Amemiya, there are several (five) types of Tobit model. The one used in this study is the standard Tobit model which can be specified as:

$$Z_i = X_i\beta + \mu_i, \qquad i = 1,2,\ldots,n$$
$$Y_i = \begin{cases} Z_i, & \forall Z_i > 0 \\ 0, & \forall Z_i \le 0 \end{cases} \tag{4}$$

where μ_i is assumed to have independent normal distribution with mean zero and variance σ^2. Z_i represents an index for the right-hand side variables and Z_i maybe positive or negative. In this study, Y_i is food expenditures while X_i is a vector of explanatory variables such as prices, income components and demographic characteristics of a household. The likelihood function of the Tobit model is given by

$$L = \prod_{Y_i=0} \Phi\left[1-\Phi(X_i\beta/\sigma)\right] \prod_{Y_i=1} \sigma^{-1}\phi\left[(Y_i - X_i\beta)/\sigma\right] \tag{5}$$

where Φ and ϕ are the cumulative distribution and density function, respectively; $Y_i = 0$ denotes zero observations for Y_i and $Y_i = 1$ denotes positive observation for Y_i. There exist several estimation methods for the standard Tobit model (see Amemiya). In this study, we use the Probit Maximum Likelihood Estimator (MLE). Specifically, the Tobit likelihood function (5) can be rewritten as

$$L = \prod_{Y_i=0}\left[1-\Phi(X_i\beta/\sigma)\right] \prod_{Y_i=1} \Phi(X_i\beta/\sigma) \prod_{Y_i=1} \Phi(X_i\beta/\sigma)^{-1}\sigma^{-1}\phi\left[(Y_i-X_i\beta)/\sigma\right] \tag{6}$$

Note that the first two products in (6) constitute the likelihood function of a Probit model and the last product is the likelihood function of the truncated Tobit model. The Probit MLE of $\alpha = \beta/\sigma$ is obtained by maximizing the log of the first two products. α is a vector of the normalized regression coefficients. Under this method, only the ratio β/σ is estimated, not β or σ separately. However, the normalized coefficients can be transformed into the regression coefficients (β) by multiplying all normalized coefficients (α) by the calculated standard error of estimated regression (σ).

One may gain further efficiency by using the Heckman's two-step estimator which extends the Probit MLE. However, the improvement of the Heckman's two-step estimator over the Probit MLE is unlikely to be as much as in the more complicated Tobit models with sample selection bias. We further note that the Probit MLE is not consistent under heteroscedasticity or nonnormality of the error term. These problems obviously require further investigation of the estimates presented in this paper.

We recognize that in using Tobit model, we essentially assume that zero expenditure means no consumption. This assumption is plausible for food at home and food away from home, separately. It is not entirely plausible for total food expenditures except in the case households receive meals as a form of pay. When the zero expenditure for total food consumption occurred because of infrequent payment as in the case of college students or simply infrequent purchases for some households, one may use the infrequency of purchase model (IPM) developed by Blundell and Meghir (1987). Instead of equating purchase as consumption as in Tobit model, the IPM works with the expected purchase and assumes expected purchases to be equal to expected consumption. Even though food does not typically fall into this category of infrequently purchased goods, the use of IPM merits further consideration in view of zero observations in the diary survey.

Regression Results

Two versions of Eq. (3) are estimated in this study. The first version (Version I) can be viewed as the Engel function which deals only with the relationship between expenditures and income (sources), holding prices constant and disregarding demographic variables. The second version (Version II) is based on the specification of a demand function expressing food expenditures as a function of food prices, income components and demographic variables. The Tobit models for these two specifications are estimated by the maximum likelihood estimation (MLE) procedure as described earlier. Under the MLE procedure, the normalized coefficients are estimated. For analyzing the quantitative impacts of explanatory variables, the original regression coefficient not the normalized coefficients should be used. However, for hypothesis testing, the normalized coefficients are tested. As can be seen in Eq. (6), the standard error of estimated regression (σ) can be easily used to transform the normalized coefficients to regression coefficients. For measuring the goodness of fit in the Tobit model, we use the usual measure of R^2 computed as the squared correlation coefficient between the actual and predicted values of the dependent variable.

The Tobit regression results for Version I are presented in Table 2. Four income components are found to have significant and different impacts on the expenditures of aggregate food, food at home, and food away from home. The only exceptions include food stamp income in the aggregate food expenditure equation and transfer income in the food away from home equation at the conventional significant level of $\alpha = 5\%$. Note that the food stamp income has a positive impact on food at home, but a negative impact on food away from home. This is consistent with our expectation. As households participate in food stamp program, they would more likely eat at home since they are less affordable to eat out.

The standard error of estimated regression for expenditures on aggregate food, food at home and food away from home are 46.98, 37.93 and 31.62, respectively. These estimated standard errors are used to obtain the regular regression coefficients which can be defined as the marginal propensity to consumer (MPC) on food. The magnitudes of MPC for food stamp income are the highest among four income sources. The MPC of food stamp income on aggregate food is 0.139 while they are 0.230 and -0.198 for food at home and food away from home, respectively. The MPC's of wage income, transfer income and other income are relatively lower than that of the food stamp income (ranging from -0.021 to 0.059). The R^2's for aggregate food and food away from home are both 0.19, but only 0.06 for food at home.

For estimating the food demand functions in Version II, various demographic variables such as family size, age of household head, number of children with age less than 18, number of household members with age greater than 64, race and region were included in many preliminary regression runs. Since many demographic variables did not exhibit much explanatory power, only the family size and race variables are included in the final model. Note that race is a dummy variable having a value of 1.0 when the head of household is black, and 0 otherwise. It is also noted that the prices of other goods and services are excluded in the model. This is because our main objective in this study is to test the hypothesis of homogeneous effects of various income sources on food expenditures rather than the estimation of a complete demand system for food or a system including food. A complete demand system along with other goods and services using the BLS's data was analyzed elsewhere.

Table 3 reports the regression results for Version II. The estimation results show some interesting findings: (1) the family size has strong positive impacts on food expenditures as expected; (2) the race has negative impacts on food expenditure in all three categories, but it is not significant for food at home; (3) price effects are unfortunately, insignificant and have a wrong sign in both the equations of food at thome and food away from home, perhaps as a result of limited price variation in the data; (4) the coefficients of food stamp income have a negative sign in the demand function but they are relatively insignificant for aggregate food and food at home. This reversion of signs after incorporating price and demographic variables may be caused by multicollinearity.

Comparing the results between Versions I and II, we also found that (1) the estimated MPC's of wage income, transfer income and other income on food expenditures are very similar between the two versions; (2) the R^2's improved from Version I to Version II for aggregate food expenditures (from 0.19 to 0.27), and food at home (from 0.07 to 0.20). However, the R^2's for food away from home remain the same between the two versions. These results would suggest that the expenditure of food away from home can be largely explained by income components while the expenditures for aggregate food and food at home are more sensitive to prices and demographic variables.

As discussed in Maddala (p.159), the expected values of dependent variable, E(Y), and the predicted probability of the dependent variable with values greater than a given limited value can be estimated. Using Version I, the expected value of the expenditure for aggregate food is computed to be \$63.1 while it is \$39.3 for food at home and \$24.1 for food away from home. The estimated probabilities of expenditure greater than zero are 0.91 for aggregate food, 0.85 for food at home and 0.72 for food away from home. Similar expected values and probabilities were obtained in Version II.

Finally, the impacts of various income sources on food expenditure are evaluated using the estimated elasticities. Table 4 presents two sets of estimated elasticities for four income components based on the estimated coefficients obtained in Version I. The first set of elasticities is computed for Y or Z in Eq. (4).[3] The second set of elasticities is computed for E(Y).[4] The elasticities for E(Y) are lower because these elasticities take into account the probability of expenditures with a non-zero level. The results show that wage income has the highest and food stamp income has the lowest elasticities of Y and E(Y) among four income components in all categories of aggregate food, food at home, and food away from home.

Table 5 shows the comparison of the estimated MPC for aggregate food expenditure obtained from this study and those from previous studies. The present study yields a lower MPC of food stamp income than found in all previous studies. Our estimated MPC of total household income is within the range of the previous estimates. Since this study uses more recent data than those cited, the result would imply a decline in the MPC for food from food stamp income. This important evidence would reserve further study and verification.

Conclusions

In this study, we used the recent Consumer Expenditure Diary Survey data base to investigate the impacts of various income sources on the expenditures of aggregate food, food at home, and food away from home. A Tobit model was developed for estimating these effects with truncated data due

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[3] Following Maddala,

$$E(Z_i) = X_i\beta \text{ and } \frac{\partial E(Z_i)}{\partial X_{ij}} = \beta_j$$

The elasticity formula for the jth explanatory variable is

$$E = \beta_j \frac{x_{ij}}{x_i\beta}$$

[4] Again, following Maddala,

$$E(Y_i) = \Phi\left(\frac{X_i\beta}{\sigma}\right)X_i\beta + \sigma\phi\left(\frac{X_i\beta}{\sigma}\right)$$

and

$$\frac{\partial E(Y_i)}{\partial X_{ij}} = \Phi\left(\frac{X_i\beta}{\sigma}\right)\beta_j$$

The elasticity formula for the jth explanatory variable is

$$E = \frac{\Phi\left(\frac{X_i\beta}{\sigma}\right)\beta_j X_{ij}}{\left[\Phi\left(\frac{X_i\beta}{\sigma}\right)X_i\beta + \sigma\phi\left(\frac{X_i\beta}{\sigma}\right)\right]}$$

to a zero-value for some observations of the dependent variable in the sample. Two versions of Tobit model, an Engel curve and a demand function, were estimated.

The statistical results, based on Engel relationship, show that four income components have significant varying effects on the expenditures of aggregate food, food at home, and food away from home. Furthermore, the food stamp income is found to have a relatively higher positive MPC on the expenditures of aggregate food and food at home than other income sources. The results also show that the food stamp income has a negative effect on food away from home. In comparison with previous studies, this study, using a more recent data base, obtained a lower MPC of food stamp income. A decline in the MPC of food stamp income would have important policy implication and thus it reserves further study and verification.

These regression results would also suggest that it may not be appropriate to treat various sources of expenditure (income) the same for analyzing budget allocation in a demand model. In order to accurately estimate a single expenditure elasticity in a food demand system, data should be based on households with a similar pattern of income sources.

References

Amemiya, Takeshi. (1985) Advanced econometrics. Cambridge: Harvard University Press.

Benus, J., J. Kmenta, & H. Shapiro. (1976) The dynamics of household budget allocation to food expenditures. Review of Economics and Statistics 68:129-138.

Blundell, Richard and Costas Meghir. (1987) Biveriate alternatives to the tobit model. Journal of Econometrics 34:179-200.

Bureau of Labor Statistics. (1986) Consumer expenditure survey: Diary survey. Documentation of public-use tape.

Chavas, Jean-Paul and M.L. Yeung. (1982) Effects of the food stamp program on food consumption in the southern United States. Southern Journal of Agricultural Economics 131-139.

Devaney, Barbara and Thomas Fraker. (1986) Cashing out food stamps: Impacts on food expenditures and diet quality. Journal of Policy Analysis and Management 59:725-41.

Devaney, Barbara and Thomas Fraker. (1989) The effect of food stamps on food expenditures: An assessment of findings from the nationwide food consumption survey. American Journal of Agricultural Economics 71:99-104.

Hymans S.H. and Harold T. Shapiro. (1976) The allocation of household income to food consumption. Journal of Econometrics 4:167-188.

Kinsey, J. (1983) Working wives and the marginal propensity to consume food away from home. American Journal of Agricultural Economics 65:10-19.

Maddala, G.S. (1983) Limited dependent and qualitative variables in econometrics. Cambridge: Cambridge University Press.

Smallwood, David M. and James R. Blaylock. (1985) Analysis of food stamp program participation and food expenditures. Western Journal of Agricultural Economics 10:41-54.

Tobin, James. (1958) Estimation of relationships for limited dependent variables. Econometrica 26:24-36.

West, Donald A. and David W. Price. (1976) The effects of income, assets, food programs, and household size on food consumption. American Journal of Agricultural Economics 58:725-730.

Table 1. Comparison of Sample Size and Sample Means, 1986

Items and Variable	BLS Survey	A Random Sample for this Study		
			Food Stamp Program	
		Total	Participants	Non-Participants
Sample size	9.600	2.198	132	2,066
Household size	2.56	2.54	3.14	2.50
Food Expenditure (weekly)	$63.64	$62.37	$43.22	$63.59
Food at home	39.77	38.57	35.17	38.79
Food away from home	23.87	23.80	8.05	24.80
Total Income (weekly)	493.45	489.42	139.31	511.79
Wage Income[a]	381.00	370.64	39.50	391.79
Transfer Income[b]	34.78	35.28	53.99	34.09
Food Stamp Income	1.72	1.69	28.21	0
Other Income[c]	75.95	81.81	17.61	85.91

[a] Includes wages and salaries.
[b] Includes social security payments and public assistance or welfare.
[c] Includes interest payments, capital gains, pensions, and unemployment compensation, etc.

Table 2. Regression Results of Engel Functions (Version I)

Explanatory Variables	Normalized Coefficients (10⁻³) Y1[a]	Y2[b]	Y3[c]	Regression Coefficients Y1	Y2	Y3
Constant	745.9 (19.08)[d]	588.8 (15.08)	145.5 (3.72)	35.04	22.334	4.60
Wage Income	1.20 (19.89)	0.72 (12.20)	1.13 (18.50)	0.059	0.070	-0.021
Transfer Income	1.26 (3.64)	1.84 (5.31)	-0.65 (-1.81)	0.059	0.070	-0.021
Food Stamp Income	2.95 (8.33)	6.07 (4.42)	-6.27 (-8.31)	0.139	0.230	-0.198
Other Income	0.80 (8.33)	0.42 (4.42)	0.80 (8.31)	0.037	0.016	0.025
Standard Error of Estimate (σ)	46.98	37.93	31.62			
R^2	0.19	0.07	0.19			

[a] Y1 is total food expenditure.
[b] Y2 is expenditure of food at home.
[c] Y3 is expenditure of food away from home.
[d] Figures in parenthesis are asymptotic t-ratios.

Table 3. Regression Results of Food Demand Functions (Version II)

Explanatory Variables	Normalized Coefficients (10⁻³) Y1[a]	Y2[b]	Y3[c]	Regression Coefficients Y1	Y2	Y3
Constant	503.8 (0.37)[d]	-212.4 (-0.12)	127.72 (0.08)	22.43	-7.45	4.02
Wage Income	0.96 (15.31)	0.40 (6.54)	1.06 (16.58)	0.05	0.01	0.03
Transfer Income	1.34 (03.89)	2.02 (5.82)	-0.68 (-1.88)	0.06	0.08	-0.02
Food Stamp Income	-4.96 (-1.77)	-4.21 (-1.49)	-6.28 (-2.07)	-0.22	-0.15	-0.20
Other Income	0.74 (7.75)	0.35 (3.62)	0.77 (7.94)	0.03	0.01	0.02
Price of Food	-0.45 (0.11)			0.02		
Price of Food at Home		8.43 (0.74)	-16.92 (-1.48)		0.30	-0.53
Price of Food Away from Home		-5.31 (-0.53)	14.27 (1.16)		-0.22	0.45
Family Size	23.41 (14.90)	29.07 (18.19)	4.16 (2.65)	10.43	10.19	1.31
Race[e]	-282.99 (-3.90)	-244.26 (-3.35)	-282.07 (-3.63)	-12.60	-8.56	-8.89
Standard Error of Estimate (σ)	44.53	35.05	31.52			
R^2	0.27	0.20	0.19			

[a] Y1 is total food expenditure.
[b] Y2 is expenditure of food at home.
[c] Y3 is expenditure of food away from home.
[d] Figures in parenthesis are asymptotic t-ratios.
[e] Race is a dummy variable, race=1 for black and race=0 for others.

Table 4. Estimated Income Elasticities by Income Sources (Version I)[a]

Income Sources	Estimated Elasticities of Yi Y1	Y2	Y3	Estimated Elasticities of E(Yi) Y1	Y2	Y3
Wages Income	0.339	0.259	0.561	0.299	0.211	0.396
Transfer Income	0.033	0.064	-0.031	0.030	0.518	-0.022
Food Stamp Income	0.004	0.010	-0.014	0.003	0.008	-0.010
Other Income	0.049	0.034	0.086	0.044	0.027	0.062

[a] All elasticities are computed at sample means.

Table 5. Comparison of Various Estimates of Marginal Propensity to Consume (MPC) for Food

Study	Data Base[a]	First Stage Participation Model if applicable	Estimation Method[b]	MPC of Food Stamp Income	MPC of Household Income
Present study[c]	1986 CES-Diary (BLS)	Probit	MLE	0.139	0.054[d]
Devaney and Fraker (1989)[e]	1977-78 NFCS-LI (USDA)	Probit	FIML	0.212	0.069
Devaney and Fraker (1986)	1977 Puerto Rico NFCS	Probit	FIML	0.27	0.14
	1984 Puerto Rico HFCS	Probit	FIML	0.21	0.16
Smallwood and Blaylock (1985)	1977-78 NFCS-LI (USDA)	Logit	MLE	0.23	0.099
Chavas and Yeung (1982)	1973-73 CES-Low Income Households in Southern Region	NA[f]	SUR	0.37	0.126
West and Price (1976)	1972-73 Household Survey in Washington State	NA	OLS	0.297	0.05
Benus, et al. (1976)	1968-1972 PSID	NA	GLS	0.86	0.05
Hymans and Shapiro (1970)	1968-1972 PSID	NA	OLS	0.347 (urban) 0.541 (non-urban)	0.143

[a] CES=Consumer Expenditure Survey, NFCS-LZ=Low income supplement to Nationwide Food Consumption Survey, NFCS=Nationwide Food Consumption Survey, PSID=Panel Study of Income Dynamics.
[b] MLE=Maximum Likelihood Estimation, FIML=Full Information Maximum Likelihood, SUR=Seemingly Unrelated Regression, GLS=Generalized Least Squares, OLS=Ordinary Least Squares.
[c] Version I.
[d] The weighted average of the MPC's of the four income sources.
[e] These estimates were obtained from unweighted data.
[f] NA=Not applicable.

Consumer Food Attribute Perceptions and Consumption Behavior

Jordan Lin, University of Florida[1]

This paper incorporates individual variations in perceived attributes of a food into the analysis of a cross-sectional demand with a large number of nonconsumers. The conceptual model recognizes that consumption is an individual choice decision and distinguishes between market participation and level of consumption. The results of an econometric analysis of oyster consumption in Southeastern U.S. indicate attribute perceptions of the food have significant effects on consumer choices.

Introduction

This paper examines two issues in research on consumer demand: the influences of product attributes and the presence of corner solutions. Generally speaking, there are two common ways that properties of a good such as quality can be incorporated in microeconomic demand analysis. One is the household production approach as developed by Lancaster (1966). In this approach, it is assumed that the household obtains utility from some underlying goods, i.e., properties or characteristics of the goods, that cannot be bought in the market but are instead produced in the household from inputs of market good and leisure time. It is also assumed that "the characteristics possessed by a good or a combination of goods are the same for all consumers and, given units of measurement, are in the same quantities" (Lancaster, 1966, p. 134). An alternative approach is to preserve goods as the objects of utility maximization but introducing characteristic parameters directly into the utility function (Houthakker, 1952-53; Theil, 1952-53). Specifically, market price of a good becomes a function of the measured or observed characteristics (e.g., quality) of a good. Consumers choose the characteristics explicitly and, by their choice of characteristics, they determine the price of the good. Therefore, it is evident that product characteristics are treated as objective and universal to all consumers.

There are reasons to believe that product attributes may not be considered homogenous by different individuals. Bayton (1963) pointed out the critical role that perceptions play in consumption. Individuals do not react directly to external stimuli but to their perceptions of the stimulus situations. A category of determinants that influence perceptions is the structural factors of a good, such as taste, color, size, and shape, that are based on the attributes of the good and the nature of the neurophysiological systems involved in transforming the attribute information about the good into mental data. Another category of determinants is individual preferences and value judgments which are formed by subjective forces that are reflections of personal experiences, motivations, and so on. To the extent that individual neurophysiological systems and psychological backgrounds are not identical, perceptions become the intervening variable between stimuli and behavior and the sources of differences in observed individual behavior.

Evidence to support Bayton's proposition can be found in consumer behavior studies. Zeithaml (1988) observed from an extensive literature review that there is widespread acceptance that 1) objective quality which is measurable and verifiable and subjective quality, a highly relativistic phenomenon that varies between individuals, are different; 2) objective or market price may not be the price that consumers find meaningful and encodable in their minds. O'Shaughnessy (1987) and Assael (1987) suggest that consumer beliefs (perceptions) about anticipated effects of product attributes on satisfaction are one of the principal determinants of what is purchased. For products without significant differences that are not considered by the consumers as an important purchase, such as food, beliefs or perceptions about the product's characteristics may directly affect consumer purchases.

In recent years, a number of economic demand studies also introduced consumer perceptions and attitudes toward food products in empirical analyses. For instance, Capps et al. (1988) investigated the influences of consumers' attitudes toward price in grocery shopping and attitudes toward buying nonfat foods on the consumption of lean meat. The relationship between consumers' impressions of product characteristics and purchase decision for a beef product was studied in Menkhaus et al. (1988). Both found that subjective factors were relevant to food consumption behavior.

One phenomenon which often occurs in cross-sectional consumption studies is the existence of corner solutions or zero purchase. The likelihood for this occurrence is especially large in disaggregate or product-specific analysis. A case in point is the consumption of shellfish products. Earlier consumer survey found that 82.5 percent of U. S. households did not consume any shellfish at home (Cheng and Capps, 1988). Current literature suggests three main reasons for the corner solutions in cross-section data. First, the good was not desired and hence was not consumed. Second, impediments such as transaction and information cost prohibited purchases. Third, expenditures were misreported or the good was purchased infrequently. In the case of shellfish consumption, the first reason seems to be a primary cause of zero consumption. It is also known that consumers do not purchase shellfish products as often as other meats. Earlier qualitative studies of shellfish consumption indicate that there is a great deal of heterogeneity of consumer perceptions about the attributes of these products (Sanchez and

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Konopa, 1974; National Fish and Seafood Promotional Council, 1988; Food Marketing Institute; Lin et al., 1989). Many non-users attributed their behavior to unfavorable taste, appearance, odor, or safety of such foods. Users frequently expressed positive beliefs of these properties. Therefore, consumption and nonconsumption of the foods seem to be related to individual perceptions of the foods' characteristics.

This paper explores an approach that incorporates individual variations in the perceived attributes of a food into the analysis of a cross-sectional demand with a large number of nonconsumers. The distinguishing feature of this approach is recognition that consumption is an individual choice decision and hence the explanation of individual behavior should be based on his/her views of the choice object. In addition to variables conventionally investigated in demand studies, subjective evaluations of the characteristics are included as explanatory variables. The second section introduces a conceptual framework that describes consumer behavior and distinguishes market participation from level of consumption. In the next section, an empirical demand model for a shellfish product, oysters, is developed. Previous findings of shellfish consumption, the data used, and statistical considerations are discussed. The last section reports the empirical results and contains some concluding remarks.

Behavioral Framework

Several assumptions about consumer behavior for an established food product[2] are used in the analysis. First, a consumer has imperfect knowledge of the product attributes, especially at each purchase occasion. Second, consumer choice of the established product (in contrast to new product) is mostly a habitual response behavior. Third, the product costs a small fraction of the total consumer budget. Most consumers are unlikely to become involved in an extensive information search and processing. Fourth, a consumer's purchase decision of such a product is partially related to the perceptions of product attributes (i.e., beliefs and awareness of the attributes) formed prior to purchase. Fifth, the food examined is weakly separable from all other goods in the individual's feasible consumption set.

Assume a well-defined sub-utility function for the food. The individual's consumption decision can be considered as a constrained optimization problem:

$$\max_{x} \quad U = U(\,x(K),\, Z\,) \qquad (1)$$

$$\text{s.t.} \quad px = m, \quad x \geq 0$$

where

U = Sub-utility for the food
x = the food examined
p = market prices of x
K = $(k_1, k_2, \ldots, k_j, \ldots, k_n)$, a vector of perceived attributes associated with the food
Z = a vector of individual demographic characteristics
m = expenditures on foods.

The relationship between the sub-utility and perceived attributes (K) is such that

$$\partial U / \partial k_j = (\partial U / \partial x)\,(\partial x / \partial k_j) > 0 \qquad (2)$$

$$\text{for all } j\text{'s.}$$

Because nonsatiation axiom of preferences means $\partial U / \partial x > 0$, Equation (2) implies that

$$\partial x / \partial k_j > 0. \qquad (3)$$

The optimal consumption of $x^*(K, m, p, Z)$ is then obtained by solving the constrained maximization problem (1) according to Kuhn-Tucker theorem.

The optimal consumption x^* can be put in the context of a behavioral model that is based on O'Shaughnessy's analysis of how individual motivations influence consumption. A consumer would not use a product if (s)he intrinsically dislikes it, or perceives it incompatible with her/his goals or needs or both. However, a consumer may not use the product even when (s)he is disposed toward considering a purchase. Unfavorable attribute perceptions or the constraint imposed by income or both can prevent the disposition from being realized and lead to no consumption.

Figure 1 depicts a behavioral framework where consumer motivations are integrated into the constrained utility maximization problem (Equation 1). Nonconsumption of a product is partly due to the product attribute perceptions held by the consumer. An individual may be observed not participating in a product market ($x^* = 0$) either because (s)he is not disposed to consider using the product ($q \leq q^*$, where q can be considered as

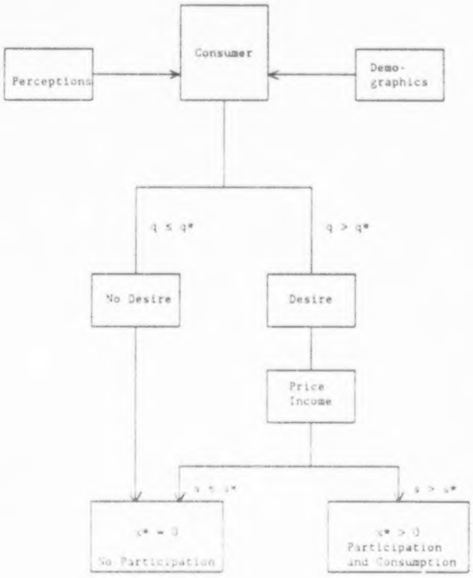

Figure 1
A Framework of Consumer Behavior

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[2] An established product is defined as an existing product in the marketplace of which many consumers are likely to have acquired some level of knowledge.

an index that determines a person's potential to consume a product, q^* a threshold of the potential) or due to factors that inhibit her/him from entering the market though (s)he is inclined to buy the good (i.e., $q > q^*$ but $s \leq s^*$, where s = an index that determines the realization of consumption potential, s^* = threshold of the realization). For an individual who possesses strong enough disposition and is not inhibited by the factors mentioned above ($q > q^*$ and $s > s^*$), the level of his/her actual use of the product is conditional on perceptual and economic factors.

If the price is held constant, then an individual's demand for the product can be written as

$$x^* = g(K,\ m,\ Z \mid p) \qquad (4)$$
$$\begin{aligned} &> 0 \quad \text{iff } q > q^* \text{ and } s > s^* \\ &= 0 \quad \text{if } q \leq q^* \text{ or} \\ &\qquad\quad q > q^* \text{ but } s \leq s^* \end{aligned}$$

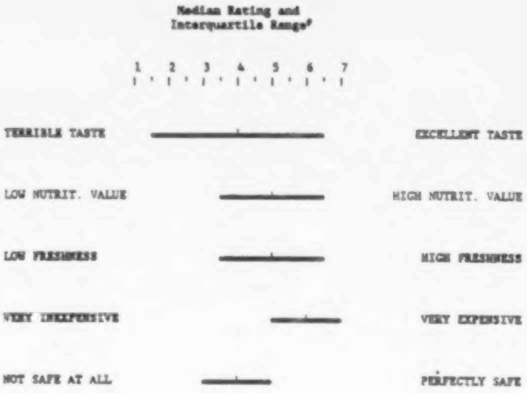
where x^* is the optimal demand and g is a demand function. It should be kept in mind that q, q^*, s, and s^* depend partly on attribute perceptions but are not observable. Nevertheless, the observed demand x^* reflects the outcome of whether both of the thresholds (q^* and s^*) are successfully crossed.

Data, Statistical Considerations, and Empirical Model

A random digit telephone survey of adult population (18 years and older) in the Southeastern and Mid-Atlantic states[3] was the source of data for this study. The survey was conducted in January and between April and June of 1990. A total of 1094 completed interviews were obtained, with a response rate of 35 percent. Respondents were asked, among other things, their consumption of oysters during the preceding two months, beliefs about five attributes of oysters, and demographic backgrounds.[4] Average number of times that oysters were eaten in a month represents consumption. The percentage of observations corresponding to zero consumption is 75.43. The five attributes were measured on a one-to-seven rating scale using a semantic differential method. Other information was recorded in category or dichotomy.

The divergence of attribute perceptions among respondents can be clearly seen in Figure 2. Respondents showed no definite direction in their beliefs about the taste of oysters. However, there is a significant portion of respondents on both ends of the rating scale which indicates that many of them hold extreme beliefs about the taste (terrible or excellent). Their perceptions of other characteristics also vary across the sample, although the interquartile ranges of these attributes are smaller than that of taste.

To analyze statistically the determinants of consumption, participation (occurrence of consumption) and frequency (use of oysters) were treated as two decisions.



Note :

# - Respondents who did not answer the attribute rating question(s) were excluded from the computation of median ratings. These respondents either responded a "Don't know" or refused to rate the attribute(s).

Figure 2
Profile of Attribute Perceptions of Oysters

There is an event (purchase) which at each observation in the sample may or may not occur. If the event does occur, a discrete and positive random variable represents consumption frequency. Otherwise, this random variable has a value of zero. The two decisions are not necessarily determined by the same distribution or the same parameters. While acquisition occurs only when desired acquisition is, in some sense, positive, there may be factors that inhibit the realization of purchase desire. In such circumstances, failure for the observed consumption to take on positive values may arise either because the desired acquisition is not positive or because of factors that inhibit an individual from acting on the desire.

Given that the dependent variable, consumption frequency, is a count variable (0, 1, ...) and truncated at zero, and considering the underlying consumer behavior, a count hurdle model developed by Mullahy (1986) was selected for empirical analysis. In Mullahy's model, which is an analogy of Cragg's variant of the Tobit model, the relative probabilities of zero and non-zero realizations of the dependent variable are allowed to differ. A binomial probability model governs the binary outcome of whether the count variable has a zero or a positive realization. If the realization is positive, the conditional distribution of the positives is governed by a truncated-at-zero count data model.

In this study, the geometric distribution of frequency count was chosen as the data generating process. The geometric distribution of a count variable Y is represented by $G(Y = y) = \theta^{y}(1+\theta)^{-(y+1)}$, where θ is a population parameter, the observed Y is $y \in \Omega = \{0, 1, 2, \ldots\}$, $E(Y) = \theta$, and $\text{var}(Y) = \theta(1+\theta)$. To ensure θ is non-negative and to incorporate the vector of independent variables X, one can specify the relationship between θ and X as $E(\theta) = \exp(X'\beta)$, where β is a vector of unknown parameters. The model can then be estimated by maximizing the likelihood function

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[3] These states are Delaware, Maryland, Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas.

[4] Distinctions in product form (raw, cooked, fresh, frozen, and so on) and where the consumption occurred (at-home or away-from-home) were not considered in the survey.

$$L = \prod_{i \in \Omega_0} \{1/[1+\exp(X_{1i}'\beta_1)]\} \quad (5)$$

$$\cdot \prod_{i \in \Omega_+} \{\exp(X_{1i}'\beta_1)/[1+\exp(X_{1i}'\beta_1)]\}$$

$$\cdot \prod_{i \in \Omega_+} \{\exp[(y_i-1)X_{2i}'\beta_2] / \{[1+\exp(X_{2i}'\beta_2)]\}^{y_i} \}$$

where $\Omega_0 = \{0\}$, $\Omega_+ = \{1, 2, \ldots\}$, X_{1i} and X_{2i} are the vectors of independent variables that determine the probability of observing zero and positive counts, respectively; β_1 and β_2 are the associated parameters, respectively; and θ_1 and θ_2 are the population parameters, respectively.

Empirically, an individual's demand for oysters was modeled in two equations:

$$E(Y_m) = \exp(b_{m0} + b_{m1}TASTE + b_{m2}NUTR + b_{m3}FRESH + b_{m4}COST + b_{m5}SAFE + b_{m6}EDUC + b_{m7}EXPOS + b_{m8}CHILD + b_{m9}MALE + b_{m10}INLAND + b_{m11}INCOME + b_{m12}AGE + b_{m13}WHITE + b_{m14}JEW + b_{m15}SMSA) \quad (6)$$

where

m = 1 for use/non-use, 2 for frequency of use
TASTE = perception of taste (1 = terrible, 7 = excellent)
NUTR = perception of nutritional value (1 = lowest, 7 = highest)
FRESH = perception of freshness (1 = lowest, 7 = highest)
COST = perception of cost (1 = very inexpensive, 7 = very expensive)
SAFE = perception of safety (1 = not safe at all, 7 = perfectly safe)
EDUC = education level (1 = grade school, 2 = some high school, 3 = high school graduate, 4 = some college, 5 = college graduate, 6 = post graduate)
EXPOS = childhood exposure to oysters (1 = yes, 0 = no)
CHILD = there are children under 12 living the household (1 = yes, 0 = no)
MALE = (1 = yes, 0 = no)
INLAND = residence is more than 100 miles from the nearest coast (1 = yes, 0 = no)
INCOME = household income (1 = less than \$20,000, 2 = \$20,000 - \$35,000, 3 = \$35,000 - \$50,000, 4 = more than \$50,000)
AGE = (1 = 18 - 34, 2 = 35 - 64, 3 = over 65)
WHITE = (1 = white, 0 = nonwhite)
JEW = (1 = Jew, 0 = non-Jew)
SMSA = population size of the geographical area in which the respondent resided (1 = non-metropolitan, 2 = less than 100,000, 3 = 100,000 - 249,999, 4 = 250,000 - 499,999, 5 = 500,000 - 999,999, 6 = 1,000,000 - 2,499,999, 7 = more than 2,500,000)

The five product attributes were selected based on previous studies of seafood and shellfish consumption.[5] Taste has been mentioned in all qualitative studies of seafood consumption as the most important characteristic that influences seafood purchases (Lin et al., 1989; Better Homes and Garden in Otwell, 1988; Sanchez and Konopa, 1974). Better Homes and Garden found that nutritional value was one of three major factors that influenced seafood consumption. In Food Marketing Institute (no date) and Lin et al. (1989), it was also noted that consumers demanded assurances of freshness because seafood was perceived more perishable than other meat products. The perception of cost (COST) does not represent market price of oysters. Instead, it is the degree of costliness of the food in a consumer's mind. A consumer may not always know or remember the actual price and (s)he may incur nonmonetary costs (time, effort) to obtain or prepare the food or both. Therefore, subjective cost is more meaningful to a consumer and is likely the cost to which (s)he responds.

In Food Marketing Institute's (no date) focus group study, some individuals expressed fears and serious concerns about food-borne illness from fish and "this has a definite impact on consumer's fish consumption behavior" (p. 13). But, Lin et al. (1989) found that safety considerations did not appear to be a widespread inhibitor of oyster consumption, especially for users who had not gotten ill from or heard about safety problems with oysters. Hence, the heterogeneity of behavioral responses to perceived safety of oysters may be another reason for consumption variation.

Education, sex, age, and race were included to control for differences in demographics. Income, as a consumption constraint, is expected to influence positively both market participation and frequency of consumption. It has been suggested that consumers are less likely to purchase seafoods if they have not been exposed to these products when they were growing up (Food Marketing Institute; National Fish and Seafood Promotional Council, 1988). The presence of young children in the household was found to reduce at-home oyster consumption (Cheng and Capps, 1988). A consumer who lives in a coastal area may have more familiarity with and access to seafoods which in turn leads to more consumption. As orthodox Judaism prohibits eating shellfish because the food is not clean, individuals affiliated with Jewish religion may tend to avoid oysters. Finally, the population size of the area in which a consumer resides may determine the availability of the food. The larger the area is, the more likely oysters are marketed in local food outlets.

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[5] Most of the a priori expectations about how perceived attributes affect seafood consumption were based on focus group studies. By nature, these studies are not representative of any population. Therefore, inferences are not subject to statistical tests and should be taken as suggestive rather than conclusive or statistically significant. Furthermore, no information on the decomposition of consumption at product-specific level was available. Therefore, perception and demographic factors were assumed to have influence on both participation and level of consumption decisions.

Results and Concluding Remarks

Table 1 presents the descriptive statistics of the usable sample with 616 observations.[6] Maximum likelihood estimates of the model based on this sample are reported in Table 2. Estimated coefficients associated with the market participation decision are shown in column 1 and estimates for the frequency decision are in the second column. The asymptotic standard errors of the coefficients, adjusted for heteroscedasticity, are reported in parentheses.[7]

As far as market participation is concerned, coefficients for taste, freshness, and cost perceptions are statistically significant and have the expected sign. Nutritional value exhibits a negative and counter-intuitive influence on the participation decision. Safety perception does not appear to influence the decision to consume oysters. The higher education a respondent received, the more likely (s)he was an oyster consumer. The negative sign on the CHILD coefficient is consistent with prior understanding. None of the remaining coefficients is significant.

In terms of consumption frequency, all coefficients associated with attribute perceptions are significant and have the expected signs. Sex is the only significant demographic characteristic, with males eating oysters more often than females.

The major difference between this and previous food consumption studies is the recognition and incorporation of consumer subjective beliefs of food attributes in the analysis of observed behavior. Conventional studies, long-run studies in particular, usually attribute individual consumption variations to differences in individual income and demographic characteristics. By contrast, this research isolates behavior-influencing factors relevant to the consumer's own views of the food. Are these subjective variables of any analytical value in understanding consumption patterns? A likelihood ratio test between the hypothesized model (with perception variables) and a restricted model without the perception variables strongly suggests that they are.[8] Therefore, inclusion of product attribute perceptions did provide useful insights into individual economic behavior.

The practical contribution of the approach proposed here lies in the information it provides to help understand consumer food consumption behavior. The empirical findings suggest that market participation and frequency of use decisions may not be subject to the same influences. This distinction can be useful in cases where zero consumption is a systematic rather than random behavior. Moreover, the food industry can utilize the information to design more focused marketing strategies when one rather than both consumer decisions is to be influenced. For instance, if frequency of eating oysters is chosen as the key target for increasing oyster consumption, then the factors that affect how often oysters are eaten would be more relevant than those influencing consumers' participation in this market.

Table 1
Characteristics of the Sample

Variable	No.	Median %
CONSUMPTION FREQUENCY		0
0 = Non-user	419	68.0
1 = Once or less	141	22.9
2 to 15 times a month	56	9.1
TASTE (perceived taste)		5
1 = Terrible	134	21.8
2	30	4.9
3	47	7.6
4	64	10.4
5	116	18.8
6	76	12.3
7 = Excellent	149	24.2
NUTR (perceived nutritional value)		5
1 = Lowest	44	7.1
2	50	8.1
3	79	12.8
4	102	16.6
5	167	27.1
6	84	13.6
7 = Highest	90	14.6
FRESH (perceived freshness)		5
1 = Lowest	32	5.2
2	27	4.4
3	52	8.4
4	99	16.1
5	137	22.2
6	100	16.2
7 = Highest	169	27.4
COST (perceived cost)		6
1 = Very inexpensive	6	1.0
2	5	0.9
3	18	2.9
4	49	8.0
5	136	22.1
6	151	24.5
7 = Very expensive	251	40.8
SAFETY (perceived safety)		4
1 = Not safe at all	49	7.8
2	54	8.8
3	112	18.2
4	140	22.7
5	129	20.9
6	73	11.9
7 = Perfectly safe	59	9.6
EXPOS(childhood exposure to oysters)		1
1 = Yes	450	73.0
0 = No	166	27.0
EDUC (education)		4
1 = Grade School	17	2.8
2 = Some High School	60	9.7
3 = High School Grad.	182	29.6
4 = Some College	165	26.8
5 = College Grad.	128	20.8
6 = Post-Graduate.	64	10.4
CHILD(presence of children < 12 years old in household)		0
1 = Yes	207	33.6
0 = No	409	66.4
MALE		0
1 = Male	256	41.6
0 = Female	360	58.4
INLAND(residence located more than 100 miles from coast)		1
1 = Yes	390	63.3
0 = No	226	36.7

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[6] A usable sample was defined as the sample without missing values in any observation for all of the dependent and independent variables.

[7] The standard errors were calculated using a procedure proposed by White (1982).

[8] Likelihood function value for each model is listed at the bottom of Table 2. The likelihood ratio is 118.17 and the table $\chi^2_{0.05}$ value for 10 degrees of freedom is 18.30.

INCOME(household income in the previous year)			3
1 = Less than $20,001	115	18.7	
2 = $20,001 - $35,000	153	24.8	
3 = $35,001 - $50,000	187	30.4	
4 = More than $50,000	161	26.1	
AGE			2
1 = 18 - 34 years	237	38.5	
2 = 35 - 64 years	298	48.4	
3 = over 65 years	81	13.1	
WHITE			1
1 = White	495	80.4	
0 = Non-White	121	19.6	
JEW			0
1 = Jewish	10	1.6	
0 = Other groups	606	98.4	
SMSA(population size of the area in which the respondent resided)'			4
1 = Non-Metro. area	182	29.6	
2 = Less than 100,000	4	0.7	
3 = 100,000 - 249,999	82	13.3	
4 = 250,000 - 499,999	45	7.3	
5 = 500,000 - 999,999	82	13.3	
6 = 1 mil. - 2.5 mil.	87	14.1	
7 = More than 2.5 mil.	134	21.8	

Table 2
Maximum Likelihood Estimates of the Determinants of Consumption of Oysters

	Coefficient	
Variable	Participation	Frequency
Intercept	-2.98	-2.18
	(0.78)[a]	(1.17)
TASTE	0.39*	0.26*
	(0.05)	(0.12)
NUTR	-0.11	0.20*
	(0.07)	(0.11)
FRESH	0.11*	0.22*
	(0.06)	(0.12)
COST	-0.10‾	-0.34*
	(0.08)	(0.11)
SAFE	0.06	0.16‾
	(0.07)	(0.12)
EDUC	0.24‾	-0.07
	(0.09)	(0.14)
EXPOS	-0.02	0.19
	(0.23)	(0.33)
CHILD	-0.32‾	0.33
	(0.22)	(0.32)
MALE	0.11	0.51‾
	(0.20)	(0.31)
INLAND	-0.26‾	0.30
	(0.20)	(0.32)
INCOME	0.10	-0.15
	(0.10)	(0.15)
AGE	-0.16	-0.28
	(0.16)	(0.25)
WHITE	0.23	-0.55
	(0.27)	(0.39)
JEW	-0.17	0.11
	(0.62)	(0.68)
SMSA	-0.04	0.04
	(0.04)	(0.07)
N		616
Log L		-533.05
Log L (Slopes =0)		-620.01
McFadden's R^2		0.14[b]
Log L (Demographics only)		-593.21

Note:
[a] - Numbers in parentheses are heteroscadesticity-adjusted asymptotic standard errors.
[b] - Computed as 1 - Log L/Log L(Slopes = 0).
* - The coefficient is significant at 0.05 level (one-tailed).
** - The coefficient is significant at 0.10 level (one-tailed).
‾ - The coefficient is significant at 0.05 level (two-tailed).

References

Assael, H. (1987) Consumer Behavior and Marketing Action. 3rd ed. Boston: Kent Publishing Co.

Bayton, J.A. (1963) Contributions of Psychology to the Microeconomic Analysis of Consumer Demand for Food. Journal of Farm Economics, 45(5),1430-1437.

Capps, O.Jr., Moen, D.S., & Branson, R.E. (1988) Consumer Characteristics Associated with the Selection of Lean Meat Products. Agribusiness 4(6),549-557.

Cheng, H.-T., & Capps, O.Jr. (1988) Demand Analysis of Fresh and Frozen Finfish and Shellfish in the United States. American Journal of Agricultural Economics, 70(3),533-542.

Food Marketing Institute (no date) Consumer Attitudes Toward Seafood: A Qualitative Research Report. Prepared by Pam Miklos. New York.

Houthakker, H. (1952-53) Compensated Changes in Quantities and Qualities Consumed. Review of Economic Studies, 19(3),155-164.

Lancaster, K.J. (1966) A New Approach to Consumer Theory. Journal of Political Economy, 74(2),132-157.

Lin, C.-T. J., Milon, J.W., Babb, E.M., & Degner, R.L. (1989) Consumer Perceptions of Shellfish Related Safety Risks: Results for East Coast Focus Groups. Paper presented at the Symposium on Seafood Advertising and Promotion, Orlando FL, October 30-31.

Menkhaus, D.J., Whipple, G.D., Torok, S.J. & Field, R.A. (1988) Developing a Marketing Strategy for Branded, Low Fat, Fresh Beef. Agribusiness 4(1),91-103.

Mullahy, J. (1986) Specification and Testing of Some Modified Count Data Models. Journal of Econometrics, 33(3),341-365.

The National Fish and Seafood Promotional Council (1988) Analysis of Consumer Attitudes Toward Fish and Seafood. Prepared by Foodservice Research & Marketing, Washington, D.C.

O'Shaughnessy, J. (1987) Why People Buy. New York: Oxford University Press.

Otwell, W. S. (1988) Health and Safety Concerns. Presented at the 1988 Institute of Food Technologists Short Course, New Orleans LA, June 18-19.

Sanchez, P. & Konopa, L.J. (1974) Fish as a Household Menu Item: Attitudes of Consumers in Cuyahoga and Summit Counties, Ohio. Institute for 21st Century Business, Kent State University, Kent OH.

Theil, H. (1952-53) Qualities, Prices and Budget Inquiries. Review of Economic Studies, 19(3),129-147.

White, H. (1982) Maximum Likelihood Estimation of Misspecified Models. Econometrica, 50(1),1-27.

Zeithaml, V.A. (1988) Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. Journal of Marketing, 52(3),2-22.

Price Sensitivity and Food Consumption: Reactions to Use of Biotechnology and BST in Food Production

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This study addresses the relative importance of price as a food selection criterion as compared to other possible characteristics, the relationship of food selection criteria and food consumption patterns, and predictors of price sensitivity when biotechnology -- such as the use of BST -- is used in food production. Results indicate that taste and wholesomeness are more important than price in making food selection choices. Regression analysis reveals that those consumers who are concerned about BST are less likely to be price sensitive; those who, in general, rank price highly as an important selection criterion are more likely to be price sensitive; and males are more likely than females to be price sensitive for a biotech food product such as milk produced with BST.

With the movement of women into the labor force and the introduction of numerous technological innovations in the food industry, there has been considerable change in household food consumption patterns. It is relatively rare to find families who primarly grow, preserve, and prepare most foods from scratch these days, a common pattern several decades ago. The trend toward eating more meals outside the home has not abated, indicating continued change. In fact, it has been predicted that households in the future need not have a fully equipped kitchens (e.g. conventional ovens) as little food preparation will be done in the home.

Along with dramatic change in food consumption patterns, there has been shifting priorities in the criterion which consumers use to make food selection choices. Aggregate food demand studies have documented that price is increasingly less important in predicting market choices while tastes and preferences are increasingly more important (Raunikar & Huang 1987). This shift in selection criterion has undoubtedly been affected by the increasing affluence level of our society, with continued rise in median family income in the 1970s and 1980s being maintained by the movement of women into the labor force -- a phenomenon which in itself is cause for change in selection criterion.

In recent years there has been another factor which may further affect household food consumption patterns and the criterion by which consumers make food selection choices: widespread public concern about food safety. While consumers are told that scientific standards indicate that the U.S. food supply is safer than ever (Toufexis 1989), there is widespread perceptions that there is a food safety problem (McKinney 1990, Mendenhall 1990, Smallwood 1989) and that our government regulatory agencies are not adequately assuring food safety (Lecos 1986, Kuehl & Simon 1973). Undoubtedly, the recent alar and poisoned Chilean grape scare has contributed to these consumer perceptions. Increasingly, consumers may feel that they must look out for themselves when it comes to food safety (Lecos 1986).

Biotechnological innovations, particularly the potential use of genetic engineering in producing food products with very different end-use characteristics, is another dimension of the current environment. While consumers have always viewed food production innovations with considerable skepticism (Warland & Hermann 1971; Slusher 1990), the current controversy over the use of bovine somatotropin (BST) in the dairy industry indicates that consumers are viewing this innovation with particular skepticism (Douthitt 1990, Slusher 1990, Washington Dairy Products Commission 1990).

Bovine somatotropin is a genetically-produced product that can boost a cow's milk production by 10 to 25 percent when injected into cows. It is a protein hormone which is also naturally occurring in cows. While the Federal Food and Drug Administration has not given approval for full commercial use of genetically-produced BST, they have asserted that milk produced with BST is safe for human consumption (Juskevich and Guyer, 1990) and have allowed experimental use. Although full FDA approval is expected in the near future,

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Consumers Union has asked for extensive additional research (Hansen, 1990). Jeremy Rifkin and his group, Foundation for Economic Trends, continue their campaign against approval. And, the chemical companies who developed the technology actively seek approval. Consumers are being given conflicting information, especially from opposing groups. As a result many consumers do have concerns about the safety of milk and dairy products produced with this new technology (McGuirk & Kaiser, 1991, Douthitt 1990, Slusher 1990, Washington Dairy Products Commission 1990).

This study addresses the degree to which contemporary consumers are price sensitive, especially with regard to foods which may be produced with new biotechnological innovations, such as BST. It is hypothesized that consumers with high concerns about a food production technology, such as BST, will be less price sensitive than those with less concern, regardless of socioeconomic factors. Consumers' food selection criterion and the relationship between such criterion and food consumption patterns will also be analyzed.

Study Methodology

Data Collection

A sampling frame of all listed telephone numbers for households in Missouri was used to randomly draw a sample of 1200. Each selected household was contacted by mail and the main grocery shopper was asked to complete and return a short mail questionnaire as well as participate at a later time in a thirty-minute telephone interview. Two hundred fourteen people returned the mail questionnaire. All of these households were contacted by telephone for the main interview. Additionally 242 households not returning the mail questionnaire were randomly selected and contacted by phone. Overall, 456 households were contacted for the main phone interview, with 81 noncontacts (e.g., disconnected phone, business numbers, etc.). Data were obtained for 219 households, representing 58 percent of the sample contacted by phone. Data were collected in March-May, 1990.

Sample Characteristics

Table 1 provides information on the characteristics of sample respondents and their households. Most respondents (70 percent) were female, an expected characteristic as the main grocery shopper was interviewed. Age ranged from 18 to 99 years, with a mean of 49.9 years. Respondents lived in diverse household types: 14 percent were in single person households, 35 percent were in two-person households, with the remaining being in larger households. Mean household size was 2.8.

Table 1
Characteristics of the Sample
(n=219)

	%	f
Gender of Respondent		
Male	26%	57
Female	70%	154
(Missing)	(4%)	(8)
Age of Respondent		
18-30 yrs.	9%	20
31-45 yrs.	30%	66
46-65 yrs.	38%	83
66 & over	17%	38
(Missing)	(6%)	(12)
Number of Household Members		
1	14%	30
2	35%	77
3	21%	46
4	14%	32
Over 4	13%	27
(Missing)	(3%)	(7)
Respondents Educational Level		
Grade School	10%	21
High School	30%	65
Vocational-Technical School	6%	14
Some College	29%	64
College Degree	15%	33
Advanced Degree	8%	18
(Missing)	(2%)	(4)
Whether Respondent Has Studied Food & Nutrition		
No	35%	77
Yes	63%	138
(Missing)	(2%)	(4)
Where Respondents Have Studied Food & Nutrition		
High School Home Economics	45%	99
College Course	12%	27
Extension Course	10%	21
4-H	10%	21
Where Respondent Spent Childhood		
Farm or Rural Area	38%	84
Small Town (<10,000)	22%	47
Small City (10,000 - 100,000)	14%	30
Large City (>100,000)	24%	53
(Missing)	(2%)	(5)
Current Residence		
Farm or Rural Area	21%	46
Small Town (<10,000)	21%	46
Small City (10,000-100,000)	22%	49
Large City (>100,000)	33%	72
(Missing)	(3%)	(6)
Household Income		
Below $10,000	6%	12
$10,000-20,000	17%	38
$20,000-30,000	25%	55
$30,000-40,000	20%	43
$40,000-50,000	12%	27
over $50,000	16%	35
(missing)	(4%)	(9)

All educational levels were represented. Nearly one-fourth of the sample had a college or graduate degree. Sixty-three percent had studied food and nutrition, most often in high school home economics classes.

While 38 percent of the respondents grew up in a rural area, only 21 percent currently reside in rural areas. Consistent with mobility trends over recent decades, more respondents currently reside in small or large cities.

All household income levels were represented, with 45 percent of the sample being in the $20,000 - $40,000 range. Six percent of the sample had income below $10,000 while 16 percent had income above $50,000.

Measures and Analytical Methods

Food Selection Criteria. Respondents ranked five food selection criteria in priority order of importance, with a 1 representing the most important criterion and a 5 representing the least important criterion. The food selection criteria were: price, taste, wholesomeness, convenience, and appearance. Descriptive statistics are used to analyze these rankings.

Selection Criteria and Food Consumption Patterns. Correlational analysis is used to assess the relationship between the rank ordering of food selection criteria and the degree to which respondents use five different patterns of meeting the household's food needs. Respondents provided the percentage of their household's food needs which are met through: 1) growing, preserving, and preparing own food, 2) purchasing basic food ingredients and preparing foods from scratch, 3) purchasing convenience or near-ready-to-serve food, 4) purchasing fully prepared foods and bringing home to eat, and 5) purchasing food and eating meals outside the home. This measure was correlated with the rank ordering of food selection criteria, after reversing the ranking scale so that high rankings reflect positive correlations with the percentage of food obtained through each pattern.

Price Sensitivity for Biotech-Produced Foods. Regression analysis was used to test the predictive ability of several variables in explaining the price sensitivity of respondents to biotech-produced foods. The dependent variable -- price sensitivity -- was an index derived from the following three questions: Would you purchase milk produced with a biotech process if it were cheaper? Would you pay more for food not produced with biotech? Would you purchase biotech food if it cost less, even if there may be risk? Cronbach's alpha coefficient for this three-item index is .60.

Independent variables were: rank order of price as a food selection criterion in general, importance of price as a food selection criterion for milk in particular, gender, educational level, income level, household size, age, and an index measuring the degree of concern respondents have about the use of BST in the production of milk. The BST Concern Index was derived from seven separate questions about whether respondents had any concern about using BST. The index has a Cronbach's alpha coefficient of .82.

FINDINGS AND DISCUSSION

Food Selection Criteria

As shown in Table 2, taste and wholesomeness have the lowest mean rankings of five food selection criteria indicating they are the most important food selection criteria; price is the third most important criteria; appearance and convenience are the least important criteria in the perceptions of these respondents. The modal ranking of wholesomeness and taste is #1 in importance; the modal ranking of price is #3 in importance; and the modal rankings of appearance and convenience is #5 in importance.

Table 2
Percentage Distribution and Means of Respondents' Rankings of Food Selection Criteria
(n=219)

	----- Food Selection Criteria -----				
Rank*	Price	Taste	Wholesomeness	Convenience	Appearance
1st	18.0	33.6	39.2	3.2	7.8
2nd	25.8	30.4	24.9	11.5	6.9
3rd	33.2	23.0	17.1	14.7	12.0
4th	14.3	9.2	12.0	29.0	32.3
5th	8.8	3.7	6.9	41.5	41.0
$\bar{X}$	2.70	2.19	2.23	3.94	3.92

* 1 is most important while 5 is least important

However, there is considerable variability in the rankings of each criterion. For example, 18 percent of respondents rank price as most important while 9 percent rank it as least important. There appears to be diversity of opinion about what is important criteria in making food choices.

Selection Criteria and Food Consumption Patterns

Pearson correlations for the rank ordering (reversed scale) of the five food selection criteria and the extent to which respondents provided food needs in various ways are presented in Table 3. Correlations indicate a positive relationship between the rank ordering of price as a selection criteria and growing own foods, purchasing basic ingredients and preparing food from scratch while there is a significant negative relationship between the ranking of price and purchasing convenience foods as well as eating out. The higher respondents rank price, the more likely they are to grow their own food and to purchase and prepare foods from scratch. Those who do not rank price as an important criteria are more likely to purchase convenience foods and eat out. Given that growing and preserving ones own food and cooking from scratch are more economical methods of providing food, this makes sense.

There are significant correlations for the ranking of taste and purchasing basic ingredients and preparing foods from scratch, purchasing convenience foods, and eating out. Those who rank taste as important are less likely to purchase basic ingredients and prepare from scratch while they are more likely to purchase convenience foods and eat out.

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Table 3
Pearson Correlation Coefficients (r) of Food Selection Criteria and Food Consumption Patterns
(n=219)

	---Food Selection Criteria---				
	Price	Taste	Wholesomeness	Convenience	Appearance
Percent Grow/Preserve & Prepare from Scratch	.24***	-.04	.15*	-.18**	-.05
Percent Purchase Basic Ingredients & Prepare from Scratch	.15**	-.14*	.12*	-.35***	.16**
Percent Purchase Easy to Prepare Foods for Home Consumption	-.12*	.13*	-.17**	.32***	-.12*
Percent Purchase Already Prepared Food for Home Consumption	-.11	.01	-.22***	.38***	-.11*
Percent Eat Food Out	-.33***	.14*	-.02	.34***	-.04

* p<.05
** p<.01
*** p<.001

Note -- Food Selection Scale was reversed so that #1 Rank = 5, #2 Rank = 4, #3 Rank = 3, #4 Rank = 2, and #5 Rank = 1.

For wholesomeness, there is a significant correlation between rankings and the degree to which respondents grow and preserve their own food, purchase basic ingredients and prepare foods from scratch, use convenience foods, and purchase prepared foods to bring home to eat. The higher respondents rank wholesomeness, the more likely they are to grow and preserve their own food and purchase basic ingredients and prepare foods from scratch. The less likely they are to purchase convenience foods and to purchase prepared foods to bring home to eat.

The correlations for the ranking of convenience and food consumption patterns are what one would expect. The higher respondents rank convenience as a selection criteria, the less likely they are to grow and preserve their own food and to purchase basic ingredients and prepare foods from scratch; the more likely they are to purchase convenience foods, purchase prepared foods to bring home to eat, and to eat out.

For appearance, there is a significant correlation for purchasing basic ingredients and preparing food from scratch, purchasing convenience foods, and purchasing prepared foods to bring home to eat. The higher appearance is ranked the more likely respondents use basic ingredients to prepare foods from scratch, and the less likely they are to purchase convenience foods and bring home already prepared foods to eat.

These results indicate that consumers use growing, preserving, and preparing foods from purchased basic foods as ways of saving money and assuring wholesomeness of foods. They also indicate that buying near-ready to serve foods, bringing home prepared foods, and eating out are viewed as means of gaining convenience. Those who think that good taste is important are more likely to eat out while those who think tat appearance is important are more likely to prepare and/or eat in the home.

Price Sensitivity for Biotech-Produced Foods

Regression results are presented in Table 4. This model explains 31.7 percent of the variance in price sensitivity for biotech-produced foods. The significant predictor variables are the index measuring concerns about BST use, the overall ranking of price as an important food selection criterion, and gender.

Table 4
Results of Regression Analysis with Price Sensitivity as Dependent Variable

Independent Variables	b	SE b	Beta
BST Concern Index	-.3503***	.0412	-.5415
Ranking of Price as General Food Selection Criteria	.2613*	.1296	.1356
Importance of Price in Milk Purchases	-.0418	.1058	-.0272
Gender (0=female, 1=male)	.8645**	.3332	.1652
Educational Level	.0280	.0983	.0188
Income Level	-.1082	.1107	-.0714
Household Size	.0283	.1121	.0178
Age	-.0142	.0106	-.0956
Intercept	11.4664		
Adjusted R squared	.3170		
F Ratio	11.616***		

* p<.05
** p<.01
*** p<.0001

The negative beta coefficent (-.54) for the BST concern index indicates that the higher the concern, the less likely that respondents respond to a low price as an inducement to purchase the product. Controlling for all other factors in the model, respondents who have concerns about BST are less price sensitive. This result was consistent with the hypothesis of a negative relationship as well as the hypothesis that this variable would be the most influential variable for explaining price sensitivity for biotech-produced foods. Those who rank price as an important food selection criterion are more likely to be price sensitive (Beta = .14). And, male respondents are more price sensitive than are females (Beta = .16).

CONCLUSIONS

While price is an important food selection criteria, there are other factors which are more important for many consumers. Many consider taste and wholesomeness of foods to be more important than price when making food choices. Food provider's decision criteria are generally consistent with the way food is made available to family members. Those who consider price and wholesomeness important are more likely to grow, preserve, and prepare their food from scratch. Those who consider convenience and taste more important are more likely to purchase easy-to-prepare, already prepared foods, or eat out.

For the case of a food innovation when consumers typically have skepticism and concerns, the best predictors of price sensitivity is the degree of concern about the particular innovation in question, the relative importance of price as an important decision criteria, and gender. The higher the level of concern, the less price sensitive consumers are. They are less likely to purchase at any price. The more important price is as a selection criteria, the more price sensitive consumers are even for a product where there is some concern, regardless of income level. Finally, these findings indicate that male grocery shoppers are more likely to respond to lower prices for innovative products, even though there may be some concern about the product. Male food shoppers are greater risk takers.

REFERENCES

Douthitt, R. A. (1990). *Wisconsin consumers' attitudes towards bovine somatotropin (BST) and dairy product labeling*, (Unpublished Paper). Madison: University of Wisconsin.

Erickson, G. M., & Johansson, J. K. (1985). The role of price in multi-attribute product evaluations. *Journal of Consumer Research*, *12*, 195-199.

Hansen, M. K. (1990). *Biotechnology & milk: benefit or threat?* Mt. Vernon, NY: Consumer Policy Institute / Consumers Union.

Homer, P. M., & Kahle, L. R. (1988). A structural equation test of the value-attitude-behavior hierarchy. *Journal of Personality and Social Psychology*, *54* (4).

Ilmonen, K., & Pantzar, M. (1986). Determinants in the modern choice of food. *Journal of Consumer Studies and Home Economics*, *10*, 97-110.

Juskevich, J., & Guyer, C. G. (1990). Bovine growth hormone: human food safety evaluation. *Science*, *249*, 875-883.

Lecos, C. W. (1986 July/August), Shopping for the second 50 Years. *FDA Consumer*, pp. 29-31.

Litchtenstin, D. R., Bloch, P. H., & Black, W. C, (1988). Correlates of price acceptability, *Journal of Consumer Research*, *15*, 243-252.

McGuirk, A. M., & Kaiser, H. M. (1991, 1st quarter). BST & milk -- benefit or bane? *Choices*, pp. 20-26.

McKinney, L. (1990, 1st quarter). Fields of fear, *Choices*, pp. 16-19.

Mendenhall, V. (1990,Fall). *Public and expert perception of risks from eating food* (Vol. 51, No. 3) Logan: Utah State University, Science.

Petroshius, S. M. , & Monroe, K. B. (1987). Effect of product-line pricing characteristics on product evaluations. *Journal of Consumer Research*, *13*, 511-519.

Raunikar, R., & Huang, C.L. (1987). *Food demand analysis*. Ames: Iowa State University Press.

Simon, M. E., & Kuehl, P. G. (1973, June). FDA Listens: A Survey of Consumer Opinion About the Safety of Foods. *FDA Consumer*, pp. 15-18.

Smallwood, D. (1989). Consumer demand for safer foods. *National Food Review*, *12*, (3), 9-11.

Slusher, B. J. (1990). Consumer acceptance of food production innovations--an empirical focus on biotechnology and BST. *Proceedings of the Second International Conference on Research in the Consumer Interest*. (chapter 9) Columbia, MO: American Council on Consumer Interests.

Tuorila, H. (1987). Selection of milks with varying fat contents and related overall liking, attitudes, norms and intentions, *Appetite*, *8*, 1-14.

Valentin, E. K., & Granzin, K. L., (1990). Price, quality, and grocery shopping behavior. *Journal of Consumer Studies and Home Economics*, *14*, 1-13.

Warland, R. & Herman, R. (1971). The new wave of limitation foods: problems ahead. *Journal of Consumer Affairs*, *5*, (1).

Washington Dairy Products Commission. (1990). *BST Statewide Consumer Survey, Wave II*. Woodinville, WA: Dairy Farmers of Washington.

Couponing: Lessons For Consumers

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My assignment is to spell out lessons for two kinds of "consumers": (1) professional consumers of these research papers, and (2) consumer educators (broadly viewed) who are interested in what lessons these papers have for intelligent, non-professional consumers.

A Summary Of What We Know

In my view a careful reading of these papers should give the reader a comprehensive understanding of what we know of coupon use. In particular, the Warme-Maynes (1991) paper may be regarding as a "treasure hunt" whose prize is the enduring theory that best explains coupon use. In the judgment of Warme and Maynes, Role Theory offers the best single explanation of coupon use. In addition to this judgment Warme-Maynes offer a critical review of the literature. But theirs is not the only critical review. Consider the "literature review" section of the Avery-Bautista (1991) paper and you will encounter another, independent review with similar, but different emphases. Finally, in contrast to the Marketing literature reviewed by Warme-Maynes, Avery-Haynes (1991) and Avery-Bautista have undertaken strikingly original, but contrasting pieces of empirical research from the *consumer viewpoint*. Avery-Haynes have done an *economic* benefit-cost analysis of couponing while Avery-Bautista have analyzed the psychological payoffs.

Let me deal now with further lessons for consumer educators and their clients, intelligent consumers. First, let me note the substantial *gross* and *net* economic payoffs to coupon usage estimate by Avery-Haynes, amounting to 11 percent and 1.8 percent respectively of household income. Not bad!! But let me note that Avery-Haynes have ignored one enormous boon to couponers: "income" from couponing, the gross and net gains that Avery-Haynes have documented, are better than ordinary income. The reason: this kind of income is not taxed. Assuming a plausible marginal tax rate of 40 percent (28 percent Federal + 4 percent state income tax + 8 percent Social Security tax--up to about $50,000), the true gross and net gains from couponing come to 18 percent and 3 percent respectively. Rather impressive!!! The kind of gain that, when explained to an appreciative mate, following Role Theory, should induce warm approbation.

Should coupon users seek to redeem coupons for *all* the brands and for *all* the products that one normally buys? Certainly not!! The selling policy of an insurance saleswoman belonging to the Million Dollar Round Table is instructive. The Round Table includes (agents who sell more then $1 million face value of life insurance per year). This particular member of the Round Table confined her sales efforts to prospects whom she thought to be "good for" policies with a face value of $200,000 or more. The lesson for couponers: establish a threshold value--say fifty cents--and trouble yourself only with coupons with redemption values greater than this. Of course, there are psychic payoffs from couponing in addition to the economic costs and benefits. Consideration of these should enable you to choose a threshold value appropriate to your circumstances.

To further discharge my responsibilities to consumer educators, let me point out that couponing is but one type of price discrimination from which consumers can benefits. Others include:

- Genuine "Sales" of all types;
- Bargaining
- Off-Peak Discounts for Movies, "Early Bird" Meals, Off-Season Rents
- Discounts to Members of Groups: Your Office Group, Eagles, Church/Synagogue Members, Boy/Girl Scouts, etc., etc.
- Loyalty Clubs or Lists, e. g., Frequent Flyer Coupons on Airlines, "Special" Sales to longtime customers
- Upgrades, e.g., from an ordinary double hotel room to a suite, from Coach to First Class on Air Travel, etc.

Maynes 1990 offers a nontechnical review of Price Discrimination and a guide to consumers who wish to expand their income by taking advantage of price discrimination arrangements.

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Lessons For Consumers Of Research

Be warned about the Warme-Maynes paper. This is a review-of-the-literature paper that is only as good as the care, the judgments, and the arguments of the authors. The paper presents no new empirical evidence. Unhappily, the only way for you to assure yourself of the correctness or uncorrectness of their conclusions is to redo the entire task yourself.

The Avery-Bautista paper presents another type of problem. It utilizes an indirect psychological measurement technique called projection. The respondent in their survey is asked to record his/her agreement or disagreements with such statements as:

> "Coupon users are thrifty shoppers";
>
> "Clipping coupons is fun."

It is assumed that a respondent answers such questions in terms of his/her own attitudes. But we do not know whether this in fact occurred. In trying to establish relationships between these psychic variables and coupon use, Avery-Bautista use widely accepted and sophisticated factor analysis techniques to analyze data obtained by projection techniques. Despite the sophistication and care invested in their analysis I am struck by the paucity of statistically significant relationships between the psychological variables and coupon use--about one statistically significant variable in each equation.

Could it be that direct questioning of coupon users and non-users might have elicited more illuminating insights and a greater number of statistically significant relationships? Suppose respondents were asked:

> To what extent do coupon redemptions give you a feeling of "winning"? (Answer on a 0 to 10 scale.)
>
> To what extent do you use coupons to try out new products at low cost? (0 to 10)

In my judgment it is worth a try.

Turning to Avery-Haynes, let me remind you that their study was confined to economic gains from couponing contrasting with the Avery-Bautista and Warme-Maynes who assert that psychological factors such as "winning" and obtaining satisfaction from the role of efficient purchasing are the dominant determinants of coupon use. Thus, Avery-Haynes, while fascinating, deals with only a portion of the "income" accruing from couponing.

Let me warn you that the Avery-Haynes study is based on a double survey: (1) a telephone survey of consumers, and (2) a mail-follow-up of a random subset of the telephone study. The paper tells us that survey #2--the mail survey achieved a 65 percent response rate, but nothing about the response rate achieved in the parent telephone study. Some may view a nonresponse rate of 35 percent as commendable. As an old survey researcher, I would assert that it is commendable only if the researchers provide us with convincing evidence that the nonrespondents are indeed "highly similar" to the respondents. If there is a substantial nonresponse bias, we may be misled, no matter how sophisticated or careful the analysis of the survey.

Finally, I urge Avery-Haynes to recognize that the economic gains from couponing that they have measured are indeed "untaxed income" and are therefore equivalent to a substantially larger amount of taxed income. (If the marginal tax rate is 40 percent, then each dollar of untaxed income is equivalent to $1.67 of taxed income.) A difference worth noting.

Summing up, these papers have instructed and stimulated us.

References

Avery, R. & Bautista, L. 1991 An examination of the psychological aspects of purchase behavior: motivations for coupon use. 1991 Proceedings of the American Council on Consumer Interests, forthcoming.

______ & Haynes, G. 1991 Price discrimination in the grocery market? a cost benefit analysis of coupon use. 1991 Proceedings of the American Council on Consumer Interests, forthcoming.

Maynes, E.S. 1990 Price discrimination: an income-expanding concept. Advancing The Consumer Interest, Vol. 2, No. 1, pp. 22-27.

Warme, R. & Maynes, E.S. 1991 Role theory: a psychographic explanation of coupon redemption. 1991 Proceedings of the American Council on Consumer Interests, forthcoming.

Role Theory: A Psychographic Explanation for Coupon Redemption

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Previously published theories have isolated many of the costs faced by coupon redeemers, which often vary with the consumer's demographic characteristics. We attempt to integrate these findings into Role Theory, in which rational consumers consider both costs and benefits of couponing. By analyzing both economic and psychic factors in coupon redemption, which are suggested by psychographic variables, Role Theory attempts to predict couponing behavior even within a changing sociocultural context.

Introduction

Several theories have attempted to explain the somewhat surprising profile of the typical cents-off coupon redeemer: "a household with higher than average income, several family members, and a female head with higher than average education who does not work outside the home" (Levedahl 1988; Narasimhan 1984). This profile counters our intuitive prediction because high-income, highly educated consumers presumably have higher time costs (Levedahl 1988) as well as lower perceived marginal utilities for the money saved by using coupons, making coupon redemption less attractive (Levedahl 1988).

Numerous factors must be considered in interpreting coupon usage. Changing sociocultural variables influence which family members shop and the goals of these shoppers. Promotional tools as well as consumer products attract a target market; coupons enhance sales to consumers who have a specific role perception. That this role perception has led to higher coupon use among high income, highly educated, non-working wives and mothers results from the sociocultural environment rather than immutable characteristics of the shoppers who match this description.

Table 1 summarizes the consistent findings concerning consumers who use coupons. Coupon users are more likely to be female, to head large families, to be married with children, to have higher than average income levels, and to plan ahead for larger but less frequent shopping excursions.

Table 1
Coupon Usage Segmentation

Characteristic		Coupon Users Likely to:	Non-Redeemers More Likely to:
(1)	Household Size	large	live alone
(2)	Sex	female	male
(3)	Age	32-59	<32 or >72
(4)	Marital Status	married	single
(5)	Children	have kids	no kids
(6)	Income	$20K to 50K	<20K or >50K
(7)	Years Shopped	≥ 10 years	<10 years
(8)	Shopping Frequency	<3 times/wk	≥ 3 times/wk
(9)	Time Spent Shopping	≥ 1/2 hour	<1/2 hour
(10)	Dollars Spent Shopping	≥ $20 per trip	<$20 per trip

Adapted from Meloy, 1988.

The Case for Role Theory As the Dominant Explanation

Role Theory considers the coupon redeemer a rational economic person, who compares the costs of coupon redemption with the benefits, where costs and benefits include both economic and psychic components. But the central idea of Role Theory is that psychic benefits occur when coupon redeemers perceive themselves or others perceive them to be successfully performing the behaviors associated with their role. Thus, Role Theory, in partial contrast to previous theories, discriminates among consumers on the basis of psychographic variables such as interests, values, and activities rather than demographic variables.

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Our paper synthesizes and draws from several theories which have been developed to explain this surprising profile. We attempt to answer the critical question: What are the dominant, enduring theories and factors explaining coupon use? We believe that Role Theory provides the dominant explanation for coupon redemption behavior, as well as incorporating powerful aspects of previously suggested theories.

A Culling of the Literature

The "Efficiency Hypothesis"

One explanation for the high income, highly educated profile of the coupon redeemer is the "Efficiency Hypothesis." It asserts that consumers with more income and education "are better able to locate, sort, organize, and cash in coupons" (Levedahl 1988). Similar reasoning explains how this group tends to benefit from other forms of price discrimination as well.

However, as Antil argues (1985), more efficient search behavior cannot entirely explain higher rates of coupon redemption, since coupons have promotional value, and have been shown to increase sales more effectively than simple price reductions.

The Effect of Coupon Availability

Restricted availability of coupons has also been suggested as a reason for lower coupon use among less educated, lower income groups, who spend significantly less for reading material. Ninety percent of coupons are distributed in newspapers and magazines (D'Arcy, et. al. 1986), and direct mail distribution may be tailored to higher income groups.

However, consumers influenced by coupons in their purchase decisions listed product packages as one of their top two sources of coupons (Teel, Williams, Bearden 1980). Even when coupons are available, consumers still must take additional steps to redeem the coupons.

Income As a Determinant of Coupon Use

Narasimhan (1982) proposes that higher income households prefer higher-priced brands. Thus, on average, high income coupon users pay a higher pre-coupon price, using coupons as a means of purchasing these higher-priced brands cheaply. Yet consumers who redeem coupons use them over a wide range of product classes (Meloy 1988), suggesting that differences in demand elasticity result from differences in the opportunity costs of couponing rather than brand preferences.

Bawa and Shoemaker (1987b) argue that coupons help impulse purchasers by reducing the perceived risk of buying an unfamiliar brand since coupons are often distributed for new brands. While Bawa and Shoemaker don't correlate brand loyalty with income, Meloy observes that as income increases, brand loyalty decreases (1988). However, Meloy's observation may well depend on the working status of the female shoppers in her sample, since the higher income shopper she describes is more variety-seeking than the contrasting lower-income shopper, and since brand loyalty saves the step of price comparison and evaluation.

Blattberg, et. al. (1978) concluded that income is a confounding variable confusing the relationship between income and coupon redemption rates. They point out that household resources such as car and home ownership reduce the transactions costs of shopping and thus increase 'deal proneness.' Unfortunately, since household resources are positively correlated with household income, we cannot determine which variable is operative. Further, the employment status of the wives is also highly correlated with household income.

Two criticisms apply to all of these theories. First, these explanations focus mainly on the costs of couponing for high income families. Both costs and benefits should be considered. Second, all of these theories were developed within a relatively short time span, and they make implicit assumptions about the sociocultural context.

As a result, these theories fail to predict changes in coupon redemption rates across groups as the sociocultural context changes. As a larger percentage of women work outside the home, and as the number of single parent households increases, there has been a fragmentation of the grocery market. Those who shop for groceries are more often men, working females, or unmarried females.

Though these hypotheses focus on the costs of coupon redemption to the exclusion of benefits, they still contribute to the cost benefit evaluation inherent in Role Theory. At present, higher income, more highly educated consumers have more household resources, more available media sources, and may perceive less risk in buying a new brand. These are important considerations in Role Theory as well, though Role Theory considers them in a less socioculturally-bound manner than the other theories.

Role Theory

As mentioned earlier, Role Theory considers the coupon user a rational economic person, who compares the savings achieved by using coupons with the time cost of using coupons. The benefits of coupon redemption include not only dollars saved, but also the psychic benefits of being a "smart shopper" (Schindler 1986). Hernandez (1990), in an analysis of home production roles, found that consumers spend time on household production based on both intrinsic rewards, such as the financial benefits derived from the activity itself, and extrinsic rewards, such as the approval of a spouse. These extrinsic rewards can be compared to role fulfillment, or psychic benefits.

To the extent that its psychic benefits decrease, coupon use will also decrease, since the rational shopper then perceives benefit only in the financial reward. Thus, while the opportunity costs of couponing are likely to be higher for the well educated, higher income consumer, the psychological benefits may be high enough to compensate.

Shimp and Kavas (1984) suggest that the perceived benefits of coupon use, such as money saved or praise from a spouse, and the perceived costs of couponing, such as buying non-preferred brands or spending time clipping coupons, vary among consumers. Therefore, couponing behavior is highly subject to both personal attitudes and family dynamics.

As illustrated in Table 2, we know that even among the broad category of regular coupon redeemers, we can differentiate among consumers based on intensity of coupon use. Consistent with the predictions of role theory, this table shows that consumers who are light users are more likely to be single and career oriented. Not surprisingly, the characteristics of light users more closely parallel attributes of non-redeemers.

The psychic benefits of coupon redemption include self-satisfaction as well as the approval of others. The "Smart Shopper mechanism" is Schindler's (1986) label for the fact that coupons allow the consumer to feel good about paying a lower price for a product, thus motivating the consumer to purchase the product. A survey by Meloy (1988) indicates that a majority of shoppers feel that coupons allow them to purchase a more expensive brand of the product than they would otherwise have purchased.

If the net benefits of couponing are more favorable in the traditional family setting, then we can expect the role of the price-conscious shopper and couponing behavior to become less influential as the number of traditional families declines and as women join the labor force.

What is the evidence for Role Theory? If Role Theory is correct, then family members who achieve recognition through this role will use coupons across many products, often over extended periods of time. This is exactly what various studies have found. For example, Bawa and Shoemaker (1987) found that consumers are consistent in their coupon usage. When

Table 2
Of all Coupon Users, Differentiating Characteristics of Heavy vs. Light Coupon Users

Characteristic	Heavy User Likely to:	Light User More Likely to:
(1) Household Size	≥ 5 people	1 person
(2) Education	high school	college
(3) Age	≥ 45 years	less than 32
(4) Marital Status	married	single
(5) Female Work Status	family-oriented	career-oriented
(6) Number of Kids	≥ 1 children	none
(7) Income	10K to 40K	<10K or ≥ 40K

Adapted from Meloy, 1988.

redemption rates were evaluated during two separate year-long periods, 75% of consumers were either above average or below average in redemption rates during both periods.

The A.C. Nielsen 1985 survey of shoppers found that most of those using coupons reported redeeming between one and four coupons per week. According to a survey by Meloy (1988), over half of those who use coupons redeem some on every shopping trip. We also know that coupon users differ from non-redeemers in that they engage in other behaviors consistent with the price-conscious shopper role. For example, they tend to scan newspaper advertisements before shopping (Teel, Williams, Bearden 1980).

Teel, Williams and Bearden (1980) found that those influenced most by coupons differed psychographically from other groups. Those who regularly redeem coupons are more likely to purchase products on impulse, which is compatible with the notion that coupons decrease the perceived risk of trying unfamiliar brands. They used more coupons, redeemed coupons more frequently, perceived larger savings from redemption, and enjoyed both grocery shopping and collecting/redeeming coupons more than others (Teel, Williams and Bearden 1980). All of these activities and attitudes are consistent with a commitment to homemaking and a perception of great rewards for performing the role of the smart shopper.

The Future for Coupons

The next question is how this psychographic profile of the coupon user can be used to predict future rates of coupon redemption across groups. According to Zeithaml's (1985) analysis of the grocery market, working women may consider price and coupon savings less important in grocery purchases than convenience and time savings. Hence, they are likely to achieve more satisfaction from their professional work role than from the traditional homemaker/purchasing agent roles. In contrast to those in the traditional home management role, these working women have earning power and other sources of satisfaction and accomplishment. Consistent with this, working wives are less likely to report checking prices or using coupons (Zeithaml 1985).

However, although the time and effort devoted to homemaking duties may differ between employed and unemployed women, differences in attitudes do not arise from employment status alone. Women cite different reasons for working, and some continue to hold traditional views of household duties. The fact that many women are working out of economic necessity rather than to fulfill career aspirations may explain the continued popularity of coupons.

Consistent with Role Theory, Zeithaml's survey (Table 3) shows that women who stay at home plan more and use more information such as nutrition labeling when shopping. They are more likely than working women to agree with such statements as "Shopping Is Fun" and "Shopping Is an Important Task." This table shows that working women who view their jobs as "careers" score considerably lower on these variables than those who work for other reasons.

Table 3
Effects of Women's Working Status on Shopping Behavior[a]

		Female Working Status		
Variable	All Women	Stay at Home	Just a Job	Career
	Mean Scores[b]			
Extent of planning	11.31	12.13	11.19	9.67
Extent of information usage	13.23	13.80	12.85	12.50
"Shopping is Fun"	2.04	2.91	1.68	1.04
"Shopping is an important task"	4.2	4.58	3.99	3.8

[a] Adapted from Zeithaml, 1985

[b] Numbers in the table represented the scoring of questions asked in the survey. A higher score denotes greater agreement with each aspect of shopping behavior. Scores on the first two shopping variables run from 3 to 15 while scores on the last two run from 1 to 5.

As the number of non-married shoppers increases, psychic benefits such as the approval of a spouse are likely to become less important. An increase in the number of male shoppers may decrease the rate of coupon redemption among high income, highly educated consumers. Coupons may not influence male shoppers as effectively as female shoppers, because "males do not view shopping, planning, and economizing the same way females view them," regardless of their demographic characteristics (Zeithaml 1985). It seems that coupon use is not as role fulfilling for men as for women.

Some Mitigating Factors

If the sociocultural shifts we noted represent a trend, why haven't we observed precipitous declines in coupon distribution and coupon use? Empirical evidence suggests that even though substantial demographic changes have already taken place, coupon use is still high (Reibstein and Traver 1982; Vilcassim and Wittink 1987).

There are several mitigating factors. One explanation is that both the supply and demand sides of the coupon market have changed. Since coupons themselves have changed, consumers are now faced with different choices. Face values of coupons have increased over time (Reibstein and Traver 1982), boosting incentives to use coupons. In addition, retailers more commonly offer double and triple coupon savings. The popularity of coupon redemption has also increased the number of stores offering and accepting coupons as a matter of practice. On the demand side, seeing other shoppers redeeming coupons may influence consumers to incorporate couponing into their own definition of the shopper's role, and make consumers feel guilty if they don't use coupons.

A second explanation is that despite changes in the factors influencing role perception, shoppers may be clinging to past perceptions and behavioral patterns. Shoppers base their couponing behavior on both current and past influences. For example, when a woman re-enters the labor force after a period of voluntary unemployment, she may go out of her way to maintain the same couponing behaviors. Zeithaml (1985) makes a related point when she argues that age influences the shopper's attitude toward shopping, indicating either that consumers develop habits, or that individuals are influenced differently by certain costs, such as the opportunity cost of time.

Researchers have presented conflicting reports concerning the effects of age on coupon redemption. Several researchers have found that age and the number of years the consumer has shopped are positively correlated with coupon redemption. This is also predicted by the Efficiency Hypothesis, since experience may lead to lower costs of coupon redemption. Our feeling is that the effects may be product specific, or overridden by the effects of other variables, such as the sociocultural context experienced during certain stages in one's life.

To make a valuable contribution, Role Theory must suggest future trends in couponing. Role theory suggests that coupon use is not inherently the domain of certain consumers, based on sex, income level or education, but is subject to change with sociocultural influences on buying behavior. As more women consider themselves a permanent part of the labor force, we will probably see fewer differences in couponing behaviors between high and low income groups, or between consumers with higher and lower levels of education.

Yet other theories and even current trends in the marketplace suggest that coupons are here to stay. As those who shop for groceries become a more heterogeneous group, role theory predicts a fragmentation of the target market for coupons. While coupons may remain an effective promotional tool for a smaller market, our prediction is that marketers who target consumers with coupons based on demographic characteristics alone will be less and less successful as these changes develop.

Some Avenues for Future Research include:

- Studying the different effects of manufacturers' versus retailers' coupons, given that their distributions may be differently motivated. For example, retail coupons may serve as loss leaders to attract customers to the store.
- Documenting the effects of double and triple coupons.
- Analyzing whether there will be further demographic fragmentation in the grocery market.

More current figures are also needed concerning the amount by which coupon redemption reduces the consumer's grocery bill. For consumers, coupon savings are even more valuable than regular income, since the savings are not taxed. For example, for consumers at a 35% marginal tax rate, saving one dollar using coupons is equivalent to earning $1.54 of additional (taxable) income!! Yet consumers may not even be aware of this important difference! Here is a task for consumer educators.

Information on both gross payoffs, calculated before search costs are deducted, and net payoffs, which would vary with the shopper's role perceptions, would also be of interest to economists. These findings could be stratified by characteristics such as intensity of coupon use.

We call your attention to two consumer-oriented studies which had not yet been added to the predominantly marketing-oriented literature in the field at the time of our review. The Avery-Haynes study (1991) seeks to document both gross and net savings from couponing and the Avery-Bautista study (1991) seeks to measure psychological benefits from couponing.

References

Antil, J.H. (1985) Couponing as a promotional tool: consumers do benefit. Journal of Consumer Affairs, 19 (Winter), 316-327.

Avery, R. & Bautista, M.E. (1991) An examination of the psychological aspects of purchase behavior. 1991 Proceedings of the American Council on Consumer Interests, forthcoming.

______, & Haynes, G. (1991) Price discrimination in the grocery market? A cost-benefit analysis of couponn use. 1991 Proceedings of the American Council on Consumer Interests, forthcoming.

Bawa, K. & Shoemaker, R.W. (1987a) The coupon-prone consumer: some findings based on purchase behavior across product classes. Journal of Marketing, 51 (October), 99-110.

______ (1987b) The effects of a direct mail coupon on brand choice behavior. Journal of Marketing Research, 24 (November), 370-376.

Blattberg, R.C., Buesing, T., Peacock, P. & Sen, S. (1978) Identifying the deal prone segment. Journal of Marketing Research, 15 (August), 369-377.

D'Arcy, M., Benton & Bowles (1986) Couponing as a marketing tool, New York: D'Arcy, Masius, Benton and Bowles.

Douglas, S.P. (1976). Working wife vs. non-working wife families: a basis for segmenting grocery markets? Advances in Consumer Research, 3, 191-198.

Green, R.T. & Cunningham, I.C.M. (1975) Feminine role perceptions and family purchasing decisions. Journal of Marketing Research, 12 (August), 325-332.

Hernandez, S.A. (1990) The division of homework. Journal of Consumer Policy, 13 (June), 155-180.

Levedahl, J.W. (1988) Coupon redeemers: are they better shoppers? The Journal of Consumer Affairs, 22 (Winter), 264-283.

Maynes, E.S. (1990) Price discrimination: lessons for consumers. Advancing the Consumer Interest, 2 (1), 22-27.

Meloy, M.G. (1988) A segmentation analysis of consumer attitudes and usage of grocery coupons, thesis, Cornell University.

Narasimhan, C. (1982) Coupons as price discrimination devices: a theoretical perspective and empirical analysis, thesis, University of Rochester.

______ (1984) A price discrimination theory of coupons. Marketing Science, 3 (Spring), 128-147.

Reibstein, D.J., & Traver, P.A. (1982) Factors affecting coupon redemption rates. Journal of Marketing, 46 (Fall), 102-113.

Schindler, R.M. (1986) Psychological mechanisms of the effects of cents-off coupons, thesis, University of Chicago Graduate School of Business.

Shimp, T.A. & Kavas, A. (1984) The theory of reasoned action applied to coupon usage. Journal of Consumer Research, 11 (December), 795-809.

Teel, J.E., Williams, R.H. & Bearden, W.O. (1980) Correlates of consumer susceptibility to coupons in new grocery product introductions. Journal of Advertising, 9 (3), 31-35.

Uhl, J.N. (1982) Cents-off coupons: boon or boondoggle for consumers? *The Journal of Consumer Affairs*, *16* (Summer), 161-165.

Vilcassim, N.J. & Wittink, D.R. (1987) Supporting a higher shelf price through coupon distributions. *Journal of Consumer Marketing*, *4* (Spring), 27-39.

Webster, F.E., Jr (1965) The 'deal-prone' consumer. *Journal of Marketing Research*, *2* (May), 186-189.

What's behind the coupon boom? *Progressive Grocer*, *53* (November 1974), 59-64.

Zeithaml, V.A. (1985) The new demographics and market fragmentation. *Journal of Marketing*, (Summer), 64-75.

Price Discrimination in the Grocery Market? A Cost Benefit Analysis of Coupon Use

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Price reductions offered via coupons have been criticized on the grounds that they discriminate against certain groups of consumers and provide only illusionary savings. This study identifies possible discriminatory effects of coupons and describes the net savings/losses accruing to consumers from coupon use. Results indicate that most consumers realize real net savings from coupon use; and coupons don't appear to discriminate against consumers based on the "costs" of the couponing activity.

Coupon exchange is an aspect of market functioning that has experienced near phenomenal growth over the last few decades. Manufacturer and retailer sponsored coupons have been recognized as an effective marketing tool since their first introduction by C. W. Post in 1895. Since 1895 the number of coupons distributed by both manufacturers and retailers has grown rapidly from approximately 2.1 billion in 1970 to 221.7 billion issued in 1988. In 1970, 58 percent of households reported using coupons, and by 1980, 76 percent households were taking advantage of this type of promotional offer. The total number of redeemed coupons in 1988 was 7.05 billion, representing an estimated $2.93 billion of consumer savings (Antil 1985). In 1989, the latest year for which figures are available, manufacturers distributed an estimated 267.6 billion coupons (approximately 2,910 per household) with a total potential savings of nearly $132 billion per year (Wall Street Journal 1991).

Faced with the potential of such significant market savings, many consumer advisors and educators have recommended and endorsed the use of cents-off coupons as an economizing measure in weekly grocery shopping. Empirical evidence suggests that coupons appear to meet the market test of satisfaction and value in that they are used, and the continued growth in coupon distribution and redemption offers strong evidence of the high level of consumer interest in coupons (Bawa and Shoemaker 1987; Blattberg et al. 1978; Levedahl 1988; Neslin and Clarke 1987). However, since the early 1970's a group of consumer researchers and advocates have been debating the virtues of this form of promotion from the perspective of the individual consumer, and more broadly in terms of social welfare (Uhl 1982; Antil 1985; Peckham 1978; Cotton and Babb 1978; LaCroix 1983; Varian 1985). Price reductions offered via coupons have been criticized as discriminatory against low income consumers, minority consumers, and consumers with a high opportunity cost of time. They have been further criticized on the grounds that they increase prices, create demand surges and distort consumer decision making by providing only illusionary savings (Uhl 1982).

At the heart of this debate is the possible psychological impact that couponing may have on some consumers. Uhl (1982) holds that coupons contain a built in bias. Consumers have a clear financial incentive to use them, and in fact are penalized if they don't use them, but these incentives distort perceptions by creating the illusion that one is getting "something for nothing." The consumer may in fact be interpreting the coupon redemption value as compensation for their couponing activity. Uhl (1982) holds that for many consumers this may well be an accounting error and that the time and energy cost invested in the activity of couponing are an economic dead weight loss resulting in consumers donating their time and energy cost in service to the coupon sponsors. Other researchers are in agreement with this view. It has been suggested that the "thrill of dealing" (Antil 1985) or feelings of being a "good shopper" (Schindler 1984, 1988a, 1988b) that result from coupon redemption are, in fact, leading consumers to undertake economically irrational behavior.

There has been no empirical evidence to date to resolve this debate. Little is known regarding consumers' time and effort in coupon related activities nor the fruits of this labor in terms of dollars saved. The work reported in this paper attempts to address this issue. The empirical analysis focuses on identifying the determinants of coupon use and describing the "real" savings accruing to consumers from coupon use. The hypothesis explored in this research is that price reductions offered via coupons discriminate against those consumers who face a high opportunity cost of their time and/or those who face severe time constraints in their purchase activities. In addition, an analysis is performed to identify groups of consumers who may be potential net "gainers" or "losers" from couponing in economic cost accounting terms.

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The next section presents the conceptual framework, based on a model developed by Shimp and Kavas (1984) and a theory of information search developed by Stigler (1961). This conceptual framework forms the basis of the empirical analysis in this research.

Conceptual Model

The guiding premise in this research is that coupon use is rational, systematic, and thoughtful behavior. Households are assumed to make decisions in regard to the extent of coupon use in an attempt to maximize their utility, subject to constraints on their resources. Utility is obtained from market goods and services which are of two types, those purchased with coupons and those purchased without coupons. The price of goods purchased without coupons (X_i) is assumed to be P_i. The price of goods and services bought with coupons (X_i^*) is more complex. Coupons provide benefits in the form of dollar savings resulting from lower prices paid for products. However, there are certain costs associated with coupon use. These costs include both fixed costs (which do not vary with the number of coupons processed by the consumer) and variable costs (which vary directly with the number of coupons processed by the consumer).[1] Fixed costs include the money paid by the consumer for coupon sources, i.e., newspapers, magazines, etc., as well as the time and effort expended by the consumer in scanning newspapers and other coupon sources for desired coupons. Variable costs refer to cost incurred for "handling" coupons. These costs include time and effort spent clipping, sorting, filing, and redeeming the coupons in the store.

Consumers are assumed to be rational in their behavior in that they will use coupons if the marginal benefit of redeeming the coupons (reduction in price) exceeds the marginal cost of handling and processing the coupons. Restating this notion, coupons will be used under the following conditions, if

$$\sum P_i + P_{pm} + [T_{pm} + \sum T_{hi} + \sum T_{si}] * W - \sum C_i < \sum P_i \quad (1)$$

or

$$(P_{pm} + [T_{pm} + \sum T_{hi} + \sum T_{si}] * W) < \sum C_i \quad (2)$$

where:

$\sum P_i$ = weekly grocery expenditure before coupon redemption
P_{pm} = money spent on the purchase of magazines and other print material
T_{pm} = time spent scanning print materials for coupons
$\sum T_{hi}$ = time spent in handling coupon i
$\sum T_{si}$ = time spent redeeming coupon in store
W = dollar value of grocery shopper's time
$\sum C_i$ = face value of redeemed coupon

Equation 1 states that it would be rational for the consumer to use coupons if the total benefit of couponing (real price reduction) is greater than the full cost of couponing.

Based on the rationale developed above, the consumer's decision to use coupons may be framed in terms of a time/money trade-off since the "costs" associated with coupon use are primarily time related. From equation 1 it would be predicted that consumers facing severe time constraints or consumers with a high money value of time would be less likely to use coupons. In the following section an empirical model is formulated to test these predictions.

Method

Data and Sample

Data for this analysis were obtained in Columbus, Ohio during 1990. The data were obtained as part of a larger study of grocery shopping behavior designed and funded by The Ohio State University (Department of Marketing) and collected by Spencer Research Associates of Columbus. The study consisted of a telephone interview and follow-up mail survey administered to a random sample (generated by random digit dialing) of households in the Columbus, Ohio metropolitan area. The telephone interview focussed on aspects of grocery shopping such as respondents' store patronage, reasons for store patronage, weekly expenditure on groceries, time spent grocery shopping (including travelling time) and various buying strategies including price comparisons, purchasing on special, and coupon use. The mail survey contained a battery of attitude statements regarding the functioning of the grocery market, perceptions of the quality of service in this market, price dispersion in the market, and consumer attitudes toward coupon usage.

Telephone interviews and mail surveys were completed by the primary grocery shopper in the household. Six hundred telephone interviews were completed, and the response rate to the mail survey was 62 percent (N=373). An observation was used in the analysis if it had complete information from both the telephone interview and mail survey, resulting in a sample of 373 respondents. Missing data and other data related problems further reduced the final sample size to 358 respondents.

Description of the Sample

Table 1 summarizes the descriptive statistics for those respondents who were light coupon users (clipped less than eleven coupons per week) and heavy coupon users (those that clipped eleven or more coupons per week). Primary grocery shoppers in the household were predominantly female (85 percent). Non-users of coupons were more likely to be male. The average age of respondents in the sample was 46.2 years. Mean age and educational level were not found to differ significantly by coupon use intensity. Coupon users differed from non-coupon users in that a significantly higher proportion of non-users were unmarried. Coupon users were more likely to have young children in the home and live in larger families. Average household size was 2.1 for non-users and 3.0 for heavy users of coupons. Heavy coupon users were more

Table 1
Characteristics of Coupon Users by Intensity[a]

			Coupon Use Category		
Characteristic of Primary Grocery Shopper		Total Sample N=358	Non-Users N=62	Light Users N=165	Heavy Users N=131
Age	Mean	46.2	45.0	48.8	43.6
	Std. dev.	17.2	20.6	17.6	14.5
Sex	Female	85	69	86	92
	Male	15	31	14	8
Marital Status					
	Married	61	37	58	76
	Not Married	39	63	43	24
Education					
	Less than HS	8	6	8	9
	Completed HS	29	24	29	31
	1-3 years college	29	29	27	30
	4 years college	21	18	24	20
	> 4 years college	13	23	12	10
Living with children 6 years or younger					
	None	81	92	84	73
	1 or more	19	8	16	27
Household Size					
	Mean	2.6	2.1	2.3	3.0
	Std. dev.	1.3	1.2	1.2	1.4
Employment Status					
	Working	70	68	68	73
	> 20 hours	66	60	66	69
	< 20 hours	4	8	2	4
	Not working	30	32	32	27
Annual gross household income					
	Mean (in $1,000)	41.5	35.1	40.3	46.1
	Std. dev.	27.8	24.8	29.1	27.0
Weekly grocery expenditure					
	Mean ($)	64.7	52.5	62.0	73.9
	Std. dev.	33.4	29.4	32.6	34.6
Time spent grocery shopping each week					
	Mean (in min.)	95.3	79.4	91.5	107.9
	Std. dev.	52.0	47.7	49.8	54.2

likely to be in the labor force and working full time. Mean yearly household income for the sample was $41,500. As a category, heavy coupon users were found to have a slightly higher mean yearly household income $46,100. On average, coupon users were found to spend more money on groceries per week ($73.90 for heavy users compared with $52.50 for non-users), and more time in the grocery store (107.9 minutes for heavy users compared with 79.4 minutes for non-users).

The next section defines and discusses the dependent and independent variables employed in the empirical model.

Empirical Measures

Coupon Use and Savings

In the telephone interview respondents were asked if they used coupons in their weekly grocery shopping. In addition, coupon users (defined as those who clip at least one coupon per week) were asked the estimated dollar amount saved each week with the use of these coupons and their estimated weekly grocery expenditure. A variable was created to indicate the net proportion (net of time and coupon source costs) of weekly household grocery expenditures saved by using coupons (CSAVE). This variables was calculated as follows:

$$\text{SAVE} = \sum C_i - [P_{pm} + (T_{pm} + \sum T_h + \sum T_s) * W] \quad (3)$$

$$\text{CSAVE} = \text{SAVE} / (\sum P_i + \sum C_i) \quad (4)$$

where:

SAVE = net dollar savings from coupon use

CSAVE = net proportion of household grocery expenditure saved by using coupons

Resource Constraints and Control Variables

Four variables were created to indicate the degree of time pressure experienced by the primary grocery shopper. The first of these variables (HHSIZE) indicates the number of individuals in the respondents household. Larger household sizes are assumed to be associated with larger food expenditures and greater time spent shopping. The second time variable is a dummy variable created to indicate the presence of children under six years of age (KIDL6) in respondent's home. The presence of pre-school children in the home is assumed to be associated with specific time pressures. Labor force participation of the primary grocery shopper can severely constrain the time available for household production, including grocery shopping. Dummy variables were entered into the model to indicate labor force participation by the primary grocery shopper (EMPSTAT) and a variable indicating actual hours of labor market work per week (LFPHRS).

The argument was made previously that consumers with high money value of their time, i.e., high wage individuals, would be less likely to use coupons. The wage rate of the primary grocery shopper (LWRATE) was entered into the model in its natural logged form.[2]

The marketing literature reports several demographic characteristics which have been associated with coupon use. These factors include household income, availability of personal transportation, marital status, age and sex. A set of variables was created to control for these effects in the model. Note that the variable AGESQ is included in the model to capture the reported non-linearities between coupon use and age (Lee and Brown 1985). Based on findings from previous research which provides evidence of a non-linear relationship between coupon use and household income, household income was entered into the model in the natural logged form.[3] Descriptive statistics on all the variables used in this analysis are presented in Table 2.

Empirical Models and Estimation

The regression model attempts to explain variation in the net proportion of grocery expenditure saved by coupon use in terms of household time constraints and the money value of time of the primary grocery shopper, while controlling for the demographic characteristics of the coupon user. The model was estimated using the SAS Proc Reg linear models algorithm. Results of this analysis are reported in Table 3.

Based on results from the estimation of the model a simulated cost/benefit analysis was undertaken using two alternative specifications for the consumer's cost of time and selected characteristics for three groups of consumers to identify potential "net gainers" or "net losers" from coupon use. Results of this simulation are reported in Table 4. Results of this analysis are reported and discussed in the following section.

Results and Discussion

The estimation results for the regression model are summarized in

Table 2
Variable Description

Variable Name	Variable Description	Mean or Proportion of Sample
COUPON	Respondent is a coupon user	82.7%
SAVE	Net dollar saving from coupon use	$2.10
CSAVE	Net proportion of weekly grocery expenditure saved by using coupons	1.8%
HHSIZE	Number of household members	2.6
KIDL6	Children under six present in the home (yes)	19.0%
LFPHRS	Hours of market work (hours/week)	26.5 hrs
EMPSTAT	Primary grocery shopper is employed	70.2%
LWRATE	Market wage rate of shopper	$9.0
LHHY	Predicted annual family income	$41,500
CAR	Respondent owns a car	87.0%
MSTATUS	Primary grocery shopper married	61.0%
AGE	Age of primary grocery shopper	46.2 yrs
SEXF	Primary grocery shopper is female	85.0%

Table 3
Regression on Net Proportion of Weekly Grocery Expenditure Saved by Using Coupons, Using Minimum Wage Rate ($3.65) as the Estimate of the Cost of Consumer's Time in Couponing Activity

Variable Name	Parameter Estimate	Standard Errors
Intercept	0.0045	0.0446
HHSIZE	0.0065	0.0049
KIDL6	0.0292*	0.0153
LFPHRS	0.0014**	0.0006
EMPSTAT	-0.0571**	0.0252
LWRATE	0.0018	0.0061
LHHY	-0.0135*	0.0077
CAR	-0.0048	0.0159
MSTATUS	-0.0008	0.0129
AGE	0.0008*	0.0005
AGESQ	-0.0001**	0.0000
SEXF	0.0339**	0.0142

N = 358
$F_{(11,346)}$ = 3.784
R^2 / R^2 adj. = .1074/.0790

*Coefficient significant at the .10 level
**Coefficient significant at the .05 level or less

Table 4
Cost/Benefit Analysis

KEY

Costs and benefits
1 = source costs
2 = time in couponing
3 = cost of time
4 = total time cost
5 = total cost

6 = percent saved
7 = $ grocery expenditure
8 = $ saved
9 = net savings

Consumer Group
LW = Low Wage[a]
HW = High Wage
LV = Low Income[b]
HY = High Income

ANALYSIS USING MINIMUM WAGE RATE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Single Respondents:									
LW, LY:	1.96	24.63	3.65	1.50	3.46	12.50%	38.35	4.79	1.34
LW, HY:	2.88	27.66	3.65	1.68	4.56	5.00%	64.55	3.23	-1.34
HW, LY:	2.01	29.56	3.65	1.80	3.81	13.30%	44.69	5.94	2.14
HW, HY:	2.51	37.79	3.65	2.30	4.81	14.50%	56.09	8.13	3.32
Married Respondents:									
LW, LY:	2.31	29.60	3.65	1.80	4.11	8.90%	62.23	5.54	1.43
LW, HY:	1.97	28.83	3.65	1.75	3.72	8.60%	80.11	6.89	3.17
HW, LY:	1.55	36.95	3.65	2.25	3.80	13.33%	72.43	9.65	5.86
HW, HY:	2.33	22.30	3.65	1.96	4.29	9.70%	82.71	8.02	3.73

Table 3. The results do not support the hypothesis of discrimination against consumers with high time pressures in the grocery market. In fact, employed individuals and individuals in households with higher than average household income were found to obtain significantly lower savings from coupon use. Those individuals working longer hours in the labor force and those with children under six in the home were found to accrue significantly higher proportion saved from the use of coupons.

A surprising result is that the individual's market wage rate was not a significant predictor of the net proportion saved from this activity. This result would suggest that an objective measure of the consumer's opportunity cost of time (i.e., market wage rate) is not the appropriate measure of time costs used by the consumer in his/her evaluation of time in search and purchase activities. Much of the literature on market search behavior suggests that consumers use an implicit value of their time in their purchase decisions, evaluating the marginal costs and benefits of each transaction. These results would appear to indicate that, in couponing, this value is not the individual's wage rate.

Having investigated the determinants of coupon savings, an interesting further analysis is to determine the dollar amounts involved in these evaluations. Table 4 reports the results of a cost benefit analysis performed to identify groups of consumers who are likely to be "net losers" or "net gainers" in couponing transactions. The minimum wage rate was used in these analyses to value the time of the primary shopper. Results indicate that, using the minimum wage rate to evaluate consumer's time in couponing activity, very few consumers are net losers in these transactions. Net savings ranged from $1.34 per week for low wage, low income single individuals to $5.86 for high wage married individuals in low income households. Despite the fact that minimum wage is a conservative estimate of the value of time in couponing, one particular group of consumers emerged as "net losers" in this analysis. Results indicate that unmarried primary grocery shoppers with a low individual wage rate living in high income households are likely to lose, on average, approximately $1.34 per week from couponing.

What is striking about this type of market activity is the complicated mechanism by which price reductions are offered via coupons compared with other price promotional efforts. Coupons are issued at some real cost to the manufacturer/retailer which is passed on to the consumer in the form of a higher price (albeit trivial according to Antil 1985). The consumer then expends some non-trivial amount of money, time and energy in redeeming coupons. While the active involvement of the consumer in this type of market transaction process does not appear to be viewed negatively by consumers, the true benefits to this type of activity are complicated and difficult to estimate, and the potential exists that some consumers will be discriminated against via these type of transactions.

Results of this study are encouraging for consumers. Results indicate that, using a conservative estimate of cost of time in couponing activity, consumers do in fact realize real benefits from coupon use, but that these savings are relatively small. In addition, savings offered via coupons do not appear to discriminate against consumers based on the "costs" of their involvement in the activity. However, in evaluating the results of this study it should be noted that the estimates of coupon savings are highly dependent on the price of time chosen in such an evaluation. In addition, it should be noted that coupon savings are in some sense better than ordinary income to the consumer in that they represent "pre-tax" real income. This fact would further inflate the savings estimates presented in this research.

Endnotes

1. Shimp and Kavas (1984) also include "substitution" costs in their model. These costs refer to the reduction in utility resulting from the purchase of a less preferred brand in order to realize the benefits from a coupon. Substitution cost could not be assessed in this research and are assumed to be zero. The implications of this assumption are discussed in the final section of this paper.
2. Results were robust across both specifications.
3. An alternative specification was estimated using dollar household income. Results of the analysis were not sensitive to these alternative specifications.

References

Antil, J.H. (1985) Couponing As A Promotional Tool: Consumers Do Benefit. Journal of Consumer Affairs, 19 (Winter): 316-327.

Bawa, K. & Shoemaker R.W. (1987), The Coupon-Prone Consumer: Some Findings Based on Purchase Behavior Across Product Classes. Journal of Marketing, 51 (4, October): 99-110.

Blattberg, R.C., Buesing T., Peacock P. & Sen S. (1978), Identifying The Deal Prone Segment. Journal of Marketing Research, 15 (3, August): 369-377.

Cotton, B.C. & Babb E.M. (1978), Consumer Response to Promotional Deals. Journal of Marketing,42 (3, July): 109-113.

LaCroix, S.J. (1983), Marketing, Price Discrimination and Welfare. Southern Economic Journal, 49 (3, January): 847-852.

Lee, J.Y. & Brown M.G. (1985), Coupon Redemption and the Demand for Frozen Concentrated Orange Juice: A Switching Regression Analysis. American Journal of Agricultural Economics, 67 (3, August): 647-653.

Levedahl, W.J. (1988), Coupon Redeemers: Are They Better Shoppers? The Journal of Consumer Affairs, 22 (2, Winter): 264-283.

Neslin, S.A. & Clarke D.G. (1987), Relating the Brand Use Profile of Coupon Redeemers to Brand and Coupon Characteristics. Journal of Advertising Research, 27 (1, February/March): 23-31.

Peckham, J.O. (1978) The Wheel of Marketing, Scarsdale, NY: Privately printed.

Schindler, R.M. (1988a), The Role of Ego-Expressive Factors in the Consumer's Satisfaction with Price. Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior, 1: 34-39.

_____ (1988b), The Excitement of Getting a Bargain: Some Hypotheses Concerning the Origins and Effects of Smart-Shopper Feelings. Advances in Consumer Research, 16: 447-453.

_____ (1984), How Cents-Off Coupons Motivate the Consumer. Research on Sales Promotion: Collected Papers, edited by Katherine E. Jocz, Marketing Science Institute.

Shimp, T.A. & Kavas A. (1984), The Theory of Reasoned Action Applied to Coupon Usage. Journal of Consumer Research, 11 (3, December): 795-809.

Stigler, G.J. (1961), The Economics of Information. The Journal of Political Economy, 69 (3, June): 213-220.

Uhl, J.N. (1982), Cents-Off Coupons: Boon or Boondoggel for Consumers?

Journal of Consumer Affairs, *16* (1, Summer): 161-165.

Varian, H.R. (1985), Price Discrimination and Social Welfare. *American Economic Review*, *75* (4, September): 870-875.

Wall Street Journal (1991), Recession Feeds the Coupon Habit. February 20.

An Examination of the Psychological Aspects of Purchase Behavior: Motivations for Coupon Use

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This research examines the psychological rewards of couponing and examines the role that these rewards play in explaining the dollar savings accruing from coupon redemption. Data were collected in Columbus, Ohio in 1990. Results indicate that the benefits of coupon use are both economic and psychological in nature. Some consumers were found to be net losers in couponing. However, the monetary losses from couponing may be "compensated" by positive feelings about self and by perceptions that coupons increase general purchase ability.

Introduction

Over the past few decades, couponing has grown into a major promotional tool for manufacturers. It has also become an important purchase strategy for consumers, with 79% of U.S. households redeeming coupons (Nielsen 1985). Coupons owe their popularity among marketers to their recognized cost-effectiveness, flexibility as a promotional device, and consumers' acceptance and generally favorable response to them. Extensive research has been undertaken focusses on couponing from the marketer's perspective with the purpose of enhancing its promotional effectiveness. In comparison, very little research has focussed on consumer's perceptions of the costs and benefits attached to coupon use.

The purpose of this research was to examine: consumers' perceptions of their own coupon use behavior; and, how these perceptions affect their shopping behavior, specifically, their actual coupon use.

Facts About Coupons and Couponed Products

From the marketer's viewpoint, couponing is a way to generate sales by providing consumers with the incentive to continue purchasing a product or to encourage trial of a new product. The number of coupons redeemed by consumers relative to the number issued is low (3.2% in 1988) although the incidence if coupon usage among consumers is high, with 4 out of 10 consumers using coupons every time they shop (Food Marketing Institute Survey 1988). The majority of coupons issued in the market are for mass-distributed packaged consumer goods, and the most popular distribution mechanism for these coupons is free-standing inserts in newspapers, although instant in/on-pack coupons have the highest redemption rates (Bowman 1980). Coupon face values have continued to increase in real dollar terms over the past decade (Nielsen 1985). Most of the top 20 couponed items have long purchase cycles (e.g., coffee, analgesics, bar soap, sanitary products, hosiery, air freshener, and bleach).

The Shopping Behavior of Coupon Users

Research has indicated that, compared with non-users, coupon users: shop more frequently at the grocery store; spend more money and time in the store on each shopping trip; are less brand loyal and more variety seeking in their shopping behavior; and, engage in more pre-store search activity (Meloy 1988; Ward and Davis 1978). Meloy (1988) found that the two most important factors consumers considered in deciding to use coupons were: past experience with the product; and, coupon face value. In addition, she found that the ease of coupon clipping was of little importance in the decision to use coupons. The majority of respondents in her study perceived that the use of coupons substantially reduced their grocery expenditure. In addition, coupons were not found to result in the purchase of products which were not needed or wanted.

Results of studies by Schindler (1989) and Shimp and Kavas (1984) lend support to the hypothesis that couponing activity provides more than just monetary benefits to consumers. They found that the benefits to couponing were both utilitarian and ego-expressive in nature. Utilitarian benefits included: the need to shop economically in response to inflation; to obtain information about products; and, to obtain higher quality products at a reduced price (substitution benefits). Ego-expressive benefits included: feelings of being a "smart shopper"; approval and support from family members which relates to support and encouragement for the efficient shopper role; and, feelings of winning, beating the system, or being in control of the price paid for a product in the market.

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Objectives of the Study

The focus of this research was to investigate the role that these ego-expressive factors play in actual market behavior. Specifically, the question addressed was whether the ego-expressive factors (perceptions of the activity being fun and enjoyable, involvement with the role of grocery shopper, perceptions of being an expert in shopping) could explain why some consumers are net losers from coupon use.

Method

The Data

The data for this research were taken from a study of grocery shopping behavior conducted in Franklin County, Ohio by Spencer Research Associates for The Ohio State University. The study consisted of a telephone survey and a follow-up mail survey. Respondents were the primary grocery shopper for the household unit. The sample of telephone interviews was generated via random digit dialing. Of the 600 telephone respondents, 27 refused to participate in the mail survey.

Empirical Measures

Net monetary gain from coupon use. The net monetary gain from coupon usage (NMG) was obtained by evaluating the monetary benefits and monetary costs of couponing as follows:

$$NMG_i = B_i - C_i \qquad (1)$$

where:

NMG_i = net monetary gain from coupon usage of ith respondent
B_i = monetary benefits (average weekly dollar savings from use of coupons by the ith respondent)
C_i = monetary costs (average weekly direct and indirect costs incurred by the ith respondent in the redemption of coupons)

In the telephone survey, coupon users (defined as those who clip at least one coupon a week) were asked to estimate the dollar amount saved each week from couponing. The average reported weekly coupon savings was $7.80 and ranged from an average of $5.40 for light coupon users (those who clip 10 or less coupons a week) to $10.40 for heavy coupon users (those who clip more than 10 coupons a week).

There are both direct (dollar outlay) and indirect monetary costs (opportunity cost of time) involved in the use of coupons. In the telephone interview, respondents were asked the weekly amount they spent on coupon sources such as newspapers and magazines. About 18% of coupon users reported not incurring any of these direct costs. Indirect costs include the opportunity cost of time spent clipping coupons and the additional time spent in the supermarket resulting from coupon redemption. The average time spent in coupon clipping was 21 minutes per week. About 40% reported that the use of coupons resulted in additional time spent in the grocery store. Mean additional time spent in the grocery store was 20 minutes per week. The total cost of coupon use for each respondent was calculated as follows:

$$C_i = d_i + (s_i + a_i) * w_i \qquad (2)$$

where:

C_i = total dollar cost of coupon use of ith respondent per week
d_i = total weekly dollar expenditure on the purchase of coupon sources by the ith respondent
s_i = number of minutes per week spent clipping coupons by the ith respondent
a_i = additional number of minutes per week spent in grocery shopping by ith respondent as a result of coupon use
w_i = value of time of the ith respondent in couponing activity

Predicted reservation wage (Zick and Bryant 1983) was used to value respondent's time in couponing activities.

Non-monetary Benefits

The non-monetary benefits derived from coupon use may be summarized in three categories: (a) self-image benefits; (b) fun and enjoyment; and, (c) perceived rational benefits. In the mail survey, respondents were asked to rate a set of attitude statements which were designed to capture the hypothesized non-monetary benefits of coupon use using a 5-point Likert scale ("strongly agree" to "strongly disagree"). To identify a parsimonious set of latent variables from the set of measured variables representing the ego-expressive motivations for coupon use, a factor analysis procedure was employed (Rummel 1970). Principal factor analysis was used to extract the initial factors. To enhance interpretability of the initial matrix of factor loadings, varimax rotation was employed. Using the greater-than-one eigenvalue criterion, 5 factors were retained for further analysis. These factors were interpreted as follows. Factor 1 was labelled the "self-image benefits" (IMAGE). Items loading on this factor related to the self-perceptions of being a smart, conscientious, price-conscious shoppers, having initiative, and being thrifty and budget-conscious. Factor 2 was interpreted as measuring the "fun" aspect of coupon use (FUN). Loading highest on this factor were statements which indicated that shopping with coupons, coupon clipping and swapping are fun. Factor 3 was interpreted as measuring the belief that coupon activity is "rewarding and worthwhile" (REWARD). Variables loading highest on this factor included those indicating that coupon use was "worth the time and effort", "savings are worth the effort", "creates good feelings of saving" and "reduces the grocery bill a lot." Factor 4 indicated that part of the benefits of coupon use is in the creation of a "purchase script" (SCRIPT). The highest loadings on this factor were on statements such as "coupons help shoppers choose what brand/product they will buy", "coupons reduce shopper loyalty to a single brand" and "coupons do not encourage the purchase of items not needed." Factor 5 identified the "purchase benefit effect" of coupons (PURCHBEN) Perceptions of "being able to upgrade purchases", "reduce the risk of trial of new brands", and "obtaining informational value from coupons" had the highest loadings on this factor.

Marketplace Expertise and Involvement

Four additional factors were extracted from a set of attitude statement measuring the individual's "maven" characteristics (i.e., activities of aiding and assisting other consumers in their purchase activities), grocery shopping involvement, and consumer's perceptions of their own knowledgeability of grocery stores. Factor 6 was interpreted as measuring "market maven characteristics" (MAVEN). This factor describes coupon users' propensity to share information about the market such as prices, quality, new products, and best buys. Factor 7 was interpreted as "knowledge of quality service" (QUALITY). Loading highest on this factor were items regarding the consumer's perceived knowledge of the "best bakery", "best meat department", "best deli" and sources of "high quality products." Factor 8 was interpreted as measuring "general knowledge of grocery stores" (PRICE). It appeared to indicate awareness of the different grocery stores in the area and prices/specials offered in these stores. Factor 9 was interpreted as measuring "grocery shopping involvement" (INVOLVE). The variables which had the highest loadings on this factor were statements that indicated strong interest and involvement in grocery shopping.

Using the loadings on the set of identified factors representing the non-monetary benefits of coupon use, factor scores were computed and used as explanatory variables in the estimation of the empirical model.

Demographic Control Variables

Demographic variables were included in the model to control for factors which may be related to the net monetary gain from coupon use. These variables included: respondent's age, entered in its natural log form (LAGE); sex (FEMALE); a set of dummy variables for educational level of the respondent (LESSHS= less than high school education; SOMECOLL= some college education; COLLEGE= college education); household size (HHSIZE); and, log of household income (LPHINC). In addition, because the analysis was performed on only those respondents who reported using coupons, a procedure was used to correct for possible sample selection bias (Maddala 1983). The inverse Mills ratio (MILLS), which was generated using the SAS PROC MPROBIT algorithm, served this purpose and was included in the empirical model as a regressor.

Model Estimation

The final sample on which the model was estimated consisted of 277 coupon users. Ordinary least squares (OLS) regression was used in the estimation of the following model:

$$NMG = W\alpha + X\beta + Z\tau + M\Gamma + e \qquad (3)$$

where:

W = vector of factor scores relating to the ego-expressive benefits of coupon usage

X = vector of factor scores relating to marketplace expertise and involvement
Z = vector of demographic control variables
M = inverse Mills ratio
e = error term

In addition, the model was estimated separately for net "losers" and net "gainers" from coupon use.

Description of the Sample

The role of primary grocery shopper was widely held by women in the sample (85% of respondents were female). The majority of respondents were married, had at least one year of college education and were engaged in market work at the time of the survey. Only one-fourth of the respondents had young children living at home. The average weekly grocery expenditure was $64.50. Grocery shopping time averaged 97 minutes per week. 83% of respondents reported clipping at least one coupon per week. Nonusers of coupons tended to be male and live in smaller households. There were significantly more single person households among nonusers. Nonusers were also less likely to have young children living with them. Owing to the fact that they have smaller households, grocery expenditures and the amount of time spent in grocery shopping was lower for nonusers than for coupon users. Employment status and household income were not found to be associated with coupon use (Table 1).

Table 1
Sample Descriptives By Coupon Usage

Sample Characteristic	TOTAL (N=373)	USERS (N=308)	NONUSER (N=65)
	Mean (Standard deviation) or Proportion		
Age in years	46.7 (17.4)	47.1 (16.8)	45.2 (20.3)
Sex female	85	88	69
Married	60	65	38
Education at least one year of college	63	61	68
Household size	2.5 (1.3)	2.6 (1.3)	2.2 (1.2)
Living with children 10 years or younger None	75	72	89
Employment status Working	69	69	65
Annual gross income in thousand $	38.2 (23.4)	39.5 (23.4)	32.4 (22.4)
Weekly grocery expenditure	$64.5 (33.3)	$67.0 (33.5)	$52.1 (29.4)
Time spent grocery shopping min/week	97.0 (57.8)	101.1 (59.2)	78.5 (46.7)

Results

Estimation results are presented in Table 2. The full model was significant and the adjusted R^2 indicates that the predictor variables account for 17% of the variation in net monetary gain from coupon use. The coefficient on the variable FUN was significant and negative, indicating that perceptions of fun and enjoyment from coupon use are associated with net losses rather than net savings. A possible reason for this finding is that people who perceive couponing as "fun" are more likely to invest a substantial amount of time in coupon clipping and redemption. They may perceive the time in coupon activity as "free" but when objectively evaluated the investment is likely to be associated with lower net monetary gains or even net monetary losses. The coefficient on the variable IMAGE was positive and significant, suggesting that positive psychic rewards from the use of coupons is associated with net savings rather than net losses. Feelings of being "a smart shopper" may result from actual efficiency in the couponing activity.

In addition, results indicate that household size is positively associated with net monetary gains. The positive relationship may be explained by the fact that a greater volume of food is purchased by larger households, and/or that there is a greater need to economize in large households.

The significant coefficient on the Mills ratio indicates that sample selection bias exists, i.e., that coupon users are fundamentally different from the population of non-coupon users with respect to the independent variables.

Table 2 reports the results of separate regression analyses for gainers and losers. Both models have highly significant F-statistics. The coefficient on the measure of purchase benefits was significant and positive for gainers. A possible explanation for this finding is that since gainers are more intense coupon users, they redeem coupons not only for their regular brands but for a wider range of products as well.

It is interesting to note that the coefficient on the measure of self-image benefits in the analysis on net losers was significant at the .1 level. A positive self-concept (i.e., being smart, conscientious and thrifty) was found to be associated with smaller net monetary losses for "net losers." In addition, for both gainers and losers, the coefficient on the measure of enjoyment was significant and negative. These results provide evidence of the psychological benefits that coupon users derive from couponing resulting

Table 2
Regression Results

Variable	Full Model (N=277)	Net Gainers (N=182)	Net Losers (N=92)
INTERCEPT	-12.15	-2.28	9.79
IMAGE	1.02*	0.25	2.17*
FUN	-2.59***	-1.15**	-2.16*
REWARD	0.82	0.82	-1.80
SCRIPT	0.39	-0.63	1.11
PURCHBEN	0.70	1.55***	0.42
MAVEN	-1.08	0.15	-3.14***
QUALITY	0.17	-0.39	0.31
PRICE	-.02	-1.29**	1.12
INVOLVE	0.48	0.04	-0.17
AGE	2.06	-0.54	-0.66
HHSIZE	2.36***	0.97***	1.22
LPHINC	-1.81	1.00	-4.61
LESSHS	1.03	4.72***	-6.54
SOMECOLL	-0.23	-0.11	-1.08
COLLEGE	-0.47	0.25	-1.52
FEMALE	2.70	1.62	1.55
MILLS	14.75**	4.46	6.56
F	4.40***	3.69***	2.31***
R^2	.22	0.28	0.34
adjR^2	.17	0.20	0.19

*significant at .10 level
**significant at .05 level
***significant at .01 level

in "irrational" behavior when coupon benefits are evaluated in monetary terms.

Among the marketplace expertise factors, general knowledge of grocery stores (PRICE) was significant and negative for net gainers. Among losers, the market maven factor was significant and negative. These results are contrary to the expected positive relationship between marketplace expertise and net savings. It is possible that consumers who are knowledgeable about the market also have a high opportunity cost of time. This fact would result in a low net monetary gain from coupon use.

Discussion

Whether coupon users benefit from couponing as a purchase strategy will depend on the specific "costs" involved in this activity. When the full monetary costs of coupon use (i.e., including the cost of time in couponing activity) are considered, this study found that some coupon users are net losers (in an economic sense) from the use of coupons. However, results indicate that these losses may be compensated by the positive feelings couponing creates in the mind of the consumer. It is likely that some coupon users (i.e., net monetary losers) do not put a high money value on their time spent scanning, clipping, organizing and retrieving coupons, in which case couponing activity would produce pure "non-taxed" savings to the individual.

References

Bowman, Russel D. (1980). Couponing and Rebates: Profit on the Dotted Line. New York: Lebhar-Friedman Books.

Maddala, G. S. (1977). Econometrics. New York: MacGraw-Hill.

Meloy, Margaret G. (1988). A Segmentation Analysis of Consumer Attitudes and Usage of grocery Coupons. M.S. Thesis, Cornell University.

Rummel, R.J. (1970). Applied Factor Analysis. Evanston, IL.: Norwestern University Press.

Schindler, Robert M. (1988). The role of ego-expressive factors in the consumer's satisfaction with price. Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior, 1: 34-39.

Shimp, Terrance A. and Alican Kavas (1984). The theory of reasoned action applied to coupon usage. Journal of Consumer Research, 11 (December): 795-809.

Ward, Ronald W. and James E. Davis (1978). Coupon redemption. Journal of Advertising Research, 18 (August): 51-58.

Zick, Cathleen D. and W. Keith Bryant (1983). Alternative strategies for pricing home work time. Home Economics Research Journal 12(December): 133-144.

_____ (1989). The Nielsen Review of Retail Grocery Trends, New York: Nielsen Company.

_____ (1988). Food Marketing Institute Survey/ Trends: Consumer Attitudes and the Market. Washington, D. C.: Food Marketing Institute Research Department.

Financial Management Literacy for American Youth
(Workshop Summary)

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Experience with money by youth is no guarantee of adequate preparation for the challenges awaiting them as young adults--budgeting for a household, managing credit, saving and investing for financial security. Educators can have a positive impact on the financial management literacy of American youth. The workshop speakers, together with the participants, identified five keys to successful outreach for youth audiences.

The Challenge

Today's youth have economic power. A recent Rand Youth Poll estimated expenditures by youth age 7-18 to be $56 million in 1990. This is up from $36 million spent in 1979. During the same period the youth population dropped by 4 million. Jobs in the service sector and allowances from two-earner parents to fewer children are increased sources of income for youth.

Without responsibility for financing basic needs (e.g., food, housing, public education via taxes), most of youth's income, regardless of its source, is discretionary. This unrealistic consumption milieu, when coupled with peer pressure for immediate gratification and conspicuous materialism, often leaves youth ill equipped to manage financial resources in young adulthood.

The Response

Educators can positively impact the economic stability of tomorrow's young families by empowering youth with basic financial management skills today. The Cooperative Extension System (CES), a nationwide educational network linking the expertise and resources of the federal government, state land-grant universities, and 3,150 county offices, has a 77-year history of equipping Americans with the research-based knowledge and skills needed to maximize financial resources.

To reach youth in New York, Extension teamed with the State Banking and Education Departments to produce "You're Accountable," a 50-minute dramatized video with teacher's workbook. The materials, designed to be used in the mandated one semester economics course for seniors, is in every public high school in the State. Another Cornell effort, "It All Adds Up," is a nine-unit curriculum on consumer and resource management for use in the schools by younger teenagers and preteens. Outside the formal classroom, Cornell uses the 4-H project "My Money, Myself." A similar "Consumer Education-Management" project is available to Tennessee youth.

Both Tennessee and Minnesota, together with nearly 20 other State Extension Services, have teamed with the College for Financial Planning, Denver, to deliver the High School Financial Planning Program. The six-unit course acquaints youth with basic financial planning concepts and illustrates how these concepts apply to everyday life. It is projected more than 60,000 youth will enroll in this program nationwide in the 1990-91 school year.

Keys to Successful Programming

The Extension programs cited, as with any community-based educational outreach to youth, exhibit some commonalities. The purpose of this workshop was to identify keys to successful financial management programming with youth audiences.

Key #1--Define Audience Narrowly

The method and content of programs will vary depending on the age of the youth involved. For example, a 5-year-old can begin to grasp the concept of money as a finite resource; the 12-year-old will be interested in saving to meet a short-term goal, such as buying designer jeans; and the 15-year-old will take note of budgeting skills to pay car expenses. The words youth, children, and adolescents, for example, have different meanings to different educators. Be specific.

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Avoid limiting the audience to direct teaching of children. The audience may be parents, who significantly impact the values their children harbor regarding money, or teachers. The vice versa also is true.

Key #2--Expand Content Beyond Financial

Earning, spending, saving, and credit are common content components for pre-teen education. For teens, investing can be added. Knowledge, and perhaps even practices, can change as a result of educational programs in these content areas. But do not overlook change in the individual's orientation reflected by personal attitudes, values, and beliefs. Values shape decisions.

Financial management literacy goes beyond specific money use behaviors. Management allows the individual to achieve goals by using resources wisely. Effective decision-making is an important skill needed for consumer choices; identifying alternatives and their consequences help youth make better decisions in the marketplace.

Financial management educators are encouraged to team with human development and psychology experts in planning, developing, implementing, and evaluating programs reaching youth. Just as a financial plan is a lifetime endeavor, so is the development of an individual's attitudes about money. Financial, management, and individual orientation components are important content for teaching.

Key #3--Focus on Action-Oriented Education

Youth learn best through experience. Use of new technology (e.g., computers) can retain the student's interest. In any case, needs drive the educational method. For example, using the shopping mall as a classroom may motivate young teens. Involve youth in the planning process.

Key #4--Be Sensitive to the Learner's Environment

Environmental dynamics play a major role in a youth's level of knowledge and ability to learn about money management. Three factors apply.

1) Historical--where the youth's family of origin had effect, through modeling, on the values, believes, and attitudes of the youth's parents;

2) Blending--where the mother and father, through communication and conflict resolution, further model behavior related to money management; and

3) Socialization--where the youth develops via influences from siblings, parents, other family members, peers, and the entire community.

Key #5--Network

Extension has achieved the greatest outreach for youth financial management education with school enrichment efforts. For example, in New York, Extension has cooperated with the State Education Department's Occupational Education Division and the Bureau of Social Studies, the New York State Banking Department, the Home Economics Teachers Association of New York State and the New York State Council on Economic Education.

Educators, including classroom teachers, community professionals, and volunteers, obtain from Extension the insights, ideas, and action plans needed for conducting educational activities and lessons for youth. Extension responds to requests for financial management educational assistance from community job training, and preparedness programs, adolescent group homes, independent living and other special youth community programs.

Recommended References

McNeal, J. (1987) Children as Consumers: Insights and Implications. Massachusetts: Lexington Books.

Moschis, G. (1987) Consumer Socialization: A Life Cycle Perspective. Massachusetts: Lexington Books.

Rettig, K. and Morteson, M. (1986) "Household Production of Financial Management Competencies," in Deacon, R. and Huffman, W., eds., Human Resources Research 1887-1987, Ames, Iowa: Iowa State University, p. 137-147.

Stipp, H. (1988) "Children as Consumers", American Demographics, (February), p. 27-32.

Ward, S., Wackman, D. and Wartella, E. (1977) How Children Learn to Buy, Beverly Hills, CA: Sage Publications.

Incorporating Consumer Attitudes and Health Awareness in Demand Analysis: The Case of Calcium Advertising on Dairy Product Demand

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Dairy product consumption can be influenced by advertisement which increases consumer awareness of health related benefits. Market tracking data from a national survey of women show that sociodemographic variables as well as changes in consumer attitudes induced by advertisement affect the frequency of dairy product consumption.

Introduction

Advertising and promotion of generic food commodities have become more important in recent years. In the past, food manufacturing and processing industries have contributed the largest share of food advertisements through brand advertising (Rogers and Mathew, 1983). However, large stocks of agricultural commodities and the perceived opportunity to expand demand have spurred several agricultural commodity producer organizations to launch promotion of generic agricultural commodities. Currently there are about 300 producer funded "check off" programs authorized by federal or state legislation which generate more than $530 million (Armbruster and Frank, 1988). Since a major portion of the check off dollars goes to advertising and promotion activities, effective advertising strategy and program management are essential to insuring that the publicly mandated producer money is spent wisely.

A special feature of these generic food promotions is that they often provide information about product quality or characteristics related to nutrition and health. The effectiveness of such commodity promotion programs, or related nutrition education, depends on consumers' information seeking behavior, the impact of such information on consumer perceptions and subsequent consumer behavior. It is, thus, important to identify both the process of acquiring information as well as how attitudes and awareness influence the consumer's decision processes (see Khilstrom, 1974; McEwen, 1985; Wilde, 1980).

Several studies have focused on the methods and strategies of pre-purchase information seeking behavior (Jacoby et al., 1977; McCullough and Best, 1980; Feick et al., 1986), and on changes in consumers' perceptions resulting from nutrition information. Jensen and Kesavan (1987) adapted a recursive model to depict the consumers' decision making process including consumer attitudes towards calcium and consumption of dairy products. Most studies have not identified consumer nutrition information-seeking across information sources. One exception is Feick et al. (1986) who showed the importance of examining consumers' use of a variety of nutrition information sources by using a cost-benefit framework. Since generic agricultural commodity advertising is less directly attributable than the sources of information consumers consider, we take a behaviorally based approach that focuses on the process and effectiveness of nutrition related information on consumption decisions.

The purpose of this study is to investigate empirically the interplay among the sources of information, consumers' attitudes and awareness of calcium and health, and purchases of dairy products. The general framework used is an extension of Jensen and Kesavan (1987). We construct a direct measure for the unobservable attitude and awareness variable based on the observable responses to survey questions related to nutrition and health. The econometric approach treats the sources of nutrient and health information as separable from perceptions and behavior. That is, advertising information is determined in the first stage and then the changes in consumers' perceptions and purchase behavior are analyzed within a system framework in the second stage.

The paper includes a summary of the general model framework, a brief description of the calcium promotion campaign and the data used in the analysis, and a discussion of how the general model is adapted to the analysis of calcium advertising on dairy products. The empirical model is applied to Calcium Ad Tracking (CAT) data to evaluate the effectiveness of the different sources of generic information on consumer perceptions and behavior. The final section includes a discussion of the conclusions and limitations of the study.

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A General Model Framework

Much of generic food advertising is informative in nature. Thus, the information acquisition process and its interplay with consumer attitudes are important to purchase decisions. The approach taken here recognizes that the process of acquiring information leads to changes in consumer perceptions and behavior. The structure of such a consumer decision making process is specified as follows:

$$AD_s = f_s(X1, e1s) \qquad (1)$$
$$ATT = g(X2, AD_s, e2) \qquad (2)$$
$$CON = h(X3, ATT, AD_s, e3) \qquad (3)$$

where AD_s is an indicator of the recall and recognition of the information from advertising source s; ATT is an index of attitudes and awareness towards nutrition and health; CON is a measure of consumption (or purchases); X1 and X2 are sets of socio-economic variables; and e1s, e2 and e3 are vectors of the disturbance terms.

The model structure provides a generalized framework for describing the way in which consumers would process information about nutrition and health in their consumption decisions. See Khilstrom (1974) and Krugman (1977) for more discussion of such structures. This model is particularly appealing for analysis of generic advertising because both the direct and indirect effects of the information on consumption of food products can be evaluated.

Calcium Information and the Data

In 1984/85, the National Dairy Board launched a campaign promoting dairy products by informing consumers about the calcium content in dairy products. The calcium promotion program began with print and TV media; in 1987/88 TV advertising was cut back significantly. The main objective of the calcium campaign was to inform consumers, particularly women, about health related attributes of dairy products, and that dairy products provide a good source of the nutrient calcium. The Dairy Board tracked the success of the promotion through a national "tracking" telephone survey.

Calcium Ad Tracking Study

Our study uses data from the Dairy Board's calcium ad tracking (CAT) survey. The CAT survey was conducted during the period November 1985 through October 1986, and again November 1986 through October 1987. This nationwide telephone survey was designed to gather information on dairy foods consumption, attitudes and beliefs related to calcium as well as recall awareness of advertising. The empirical sample was of 2996 women between the ages of 18 to 54, comprised of 1706 women for the period November 1985 through October 1986 and 1290 for the period November 1986 through 1987.

Variables for Analysis

The variables used in the analysis and descriptive statistics are listed in Table 1. Two types of variables were created for advertising information: whether the respondent recalled seeing an advertisement from TV (DADTV) or from other sources (DADTHER). These variables were binary in nature depending upon the source of information.

Since consumers' attitudes and awareness towards nutrition and health were not directly observable, they were measured through responses to specific questions related to nutrition in dairy products and other health related issues. The responses were combined to construct index measures of consumers' attitude and awareness using a scoring procedure. Two categories of questions formed the basis for developing such indices. The first category of questions was related to the response to questions about the importance of nutrients for consumers' health (referred to as the "importance" category). The second category of questions were related to responses to questions about whether consumers agreed or disagreed about the characteristics of dairy products (referred to as the "Agree/Disagree" category). These questions were selected on the basis of exploratory factor analysis.[2]

Some modification was made to the data in order to clarify the interpretation of the responses to the survey questions. Responses which were initially coded as "no response" (0), "yes" (1), and "no" (2) were converted to "no or no response" (0) and "yes"

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[2] Only those factors which had a loading of 0.25 were retained for subsequent analysis. A copy of these results are available from the authors.

(1). Individual responses to agreement/disagreement questions were recorded on a scale of 1 to 10. In order to reflect consistently the positive attitudes about dairy products, some questions were reverse scaled. The importance questions were recorded on a scale from 1 to 4.

In general, the sum of the responses to questions was considered as a proxy to measure knowledge about nutrition and health. However, the structure of the questions in the survey was such that the modal values of the response to questions were at extreme values. This meant that an aggregate sum of the responses would always produce a high value for the consumers' knowledge index and would not include much variation. Since we were more interested in changes in consumer perceptions than the aggregate knowledge about nutrition and health, a new measure of attitude and awareness was constructed based on the modal values of the responses.

Specifically, a binary variable was created for each of the questions, taking a value of 1 if the response was at or above modal value, or zero otherwise. An attitude index towards nutrients was measured through the sum of these binary variables related to questions in the "importance" category (SCIMP3). Similarly consumers' awareness towards health was measured by the sum of the binary variables related to questions in the "agree/disagree" category (SCAGR3). An overall index of consumers' perceptions towards nutrients and health was measured as the sum of the importance (SCIMP3) and health (SCAGR3) indices, and referred to as SCIPAG.

The survey had limited information on the actual intake of calcium or dairy products. The consumption variable was measured through the frequency of consumption of specific dairy products (milk, cheese, other). Responses to questions on weekly consumption were weighted to derive data on a monthly basis.

The survey also had information about several socioeconomic and demographic characteristics. The variables included household income, race, age, employment status, marital status, the presence of children under 18 in the household, and respondent education.

Empirical Model and Estimation

The structure specified in equations 1 to 3 was adapted to analyze the effect of calcium and health information on dairy products as follows,

$$DADTV = f1(X1, Z1, e11) \tag{4a}$$
$$DADTHER = f2(X1, Z2, e12), \tag{4b}$$
$$SCIPAG = g(X2, DADTV, DADTHER, e2) \tag{5}$$
$$CON = h(X3, ASCIPAG, DADTV, DADTHER, e3) \tag{6}$$

where DADTV and DADTHER are binary variables for ad recall based TV and other media sources, respectively; SCIPAG is the index for attitude and health awareness; Z1 and Z2 are seasonal dummies or trend variables; e11, e12, e2 and e3 are disturbance terms; the other variables are as defined before.

A two-stage procedure was followed in estimating the equations. Equations 4a and 4b were estimated first through a probit procedure and then equations 5 and 6 were estimated using two stage least squares after replacing the AD exposure variables with the inverse mills ratio instrumental variables (ADTVIMR and ADOTIMR). This provided consistent estimates for both the attitudes equations, (5) and (6), and the consumption equations and also allowed testing of hypotheses about the effect of different sources of information and attitudes in the model.[3]

Empirical Results

Advertising Information

The maximum likelihood probit estimates for the TV (DADTV) and other sources (DADTHER) of information are provided in Table 2. The two equations differed in the set of exogenous variables only in terms of the seasonal and trend variables. In the DADTV equation, dummy variables for the months during which the Dairy Board had the calcium campaign on TV were included. In the DADTHER equation, a time and squared time variable were included to reflect the cumulative learning or carryover effect in information seeking behavior. Other socioeconomic variables that were common to both equations included dummy variables for income, age, education, marital status, and employment.

The results reported in Table 2 showed that income and education were important predictors of calcium advertising information from either media source. Being over the age of 35 had a negative effect on recall of TV advertisements. The monthly dummies in the DADTV equation were positive and statistically significant during the early periods of the calcium campaign, but were generally negative after November 1986. This suggests that the calcium campaign on TV was effective in the beginning but its effectiveness (in terms of recall) declined rapidly. On the other hand, the time trend variable had a positive marginal effect on DADTHER suggesting that there was some "learning" about calcium and health and this cumulative effect of increased information was through sources other than TV.

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[3] The inverse mills ratio is correlated with the corresponding dependent variable, but uncorrelated with the error terms in equations 5 and 6, and thus provides a consistent instrumental variable estimator for the AD exposure variables in equations 5 and 6 (Maddala and Lee, 1976).

Attitudes and Dairy Consumption

The two stage results of the attitude index and dairy and milk consumption are presented in Table 3. Only the results based on the scored attitude and awareness index (SCIPAG) are reported here[4]. Preliminary results suggested that the AD exposure variables (ADTVIMR or ADOTIMR) did not have a significant effect on consumption, hence they were dropped from the consumption equation. These results were also consistent with the earlier finding that the advertising information interacts indirectly through attitude and awareness variables rather than directly (Jensen and Kesavan, 1987). The socioeconomic variables included in the attitude and awareness equation were income, race, age, employment; the consumption equation also included education, marital status, presence of children and seasonal dummies.

The results from Table 3 suggest that the advertising information, especially from other than TV media sources, had a positive and significant effect on consumer attitudes towards nutrients and health awareness. Although the effect of TV advertising information was positive it was not statistically significant. Older women were more likely to have positive attitudes and awareness of calcium and health, but fully employed women did not. The attitude and awareness index was associated with increased purchases of dairy and milk products. As expected being black and older had a negative effect on dairy and milk purchases and having children had a positive effect. Being employed, whether full time or part time, also decreased the purchases of dairy products.

Conclusion

An econometric model linking advertising information from TV and Other media sources, consumers' attitudes toward nutrition and health and consumption of dairy products provided the medium for analyzing the effect of calcium advertising on dairy products consumption. The results suggested that different sources of information about product nutrition and health are important determinants of consumer attitudes. Specifically, the information from both TV and other media sources had a positive and significant influence on the consumer attitudes and awareness towards calcium and health. Information from sources other than TV had a stronger effect on attitudes. This result lends support to the marketing decision to increase calcium promotion through print and other (non-TV) media.

Furthermore, the results indicated that the attitude and awareness index had a positive and significant marginal effect on purchases of dairy and milk products. Advertising itself did not have direct influence on the purchases. This corroborates earlier findings based on a different attitude and awareness index (Jensen and Kesavan, 1987). The analysis also pointed out a key limitation in using AD tracking survey data. Since the dependent variable which measures consumption frequency is not a very precise measure of consumption, it has limited potential for studying the effect of advertising on consumption, especially for frequently consumed commodities, such as milk and dairy products (see Jensen and Kesavan, 1991 for an alternative analysis). A need also exists to refine the types of survey questions on "attitudes" related to generic food commodities. Such foods are likely to be associated with well-ingrained consumption habits and food beliefs as opposed to the more traditionally tracked branded products.

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[4] Analysis was also carried out for the different types of attitude and awareness index, using SCIMP3 and SCAGR3. This resulted in adding one more equation in the model structure to separate out the two factors of attitude and awareness indices. The results are quite similar to the one reported in the study based on the aggregate index SCIPAG.

References

Armbruster, W. & G. Frank. (1988) Generic agricultural commodity advertising and promotion: Program funding, structure and characteristics. In A.E. Extension 88-3, Cornell University, March.

Feick, L.F., R.O. Herrmann, & R.H. Warland. (1986) Search for nutrition information: A probit analysis of the use of different information sources." The J. of Consumer Affairs, 20, 173-92.

Jacoby, J., R.W. Chesnut., & W. Silberman. (1977) Consumer use and comprehension of nutrient information. J. of Consumer Research, 4, 119-28.

Jensen, H. & T. Kesavan. (1987) Generic advertising of food product characteristics. In Proceedings of the 33rd annual conference of American Council on Consumer Interests. V.L. Hampton (Ed.), Austin, Texas.

Jensen, H. & T. Kesavan. (1991) Incorporating consumer attitudes and health awareness in demand analysis: The case of calcium advertising on dairy products. Paper presented at the Southern Agricultural Economics Association Meetings, Fort Worth, Texas.

Khilstrom, R. (1974) A general theory of demand for information about product quality. J. Econ. Theory, 8, 13-39.

Krugman, H.E. (1977) Memory without recall, exposure without perception. J. of Advertising Research, 17, 7-12.

Maddala, G.S. & L.F. Lee. (1976) Recursive models with qualitative endogenous variables. Annals of Econ. and Social Measurement, 5, 525-45.

McCulluogh, J. & R. Best. (1980) Consumer preferences for food label information: A basis for segmentation. J. of Consumer Affairs, 14, 180-92.

McEwen, W. J. (1985) Awareness, recall, advertising effectiveness. In Proceedings on Research on Effectiveness of Agricultural Commodity Promotion, Arlington, Virginia.

Rogers, R. T. & L.I. Mathew. Food advertising, 1954-1979. In John M. Connor and Ronald W. Ward (Eds.) Advertising and the Food System. Madison, Wisconsin: North Central Regional Research Project NC 117, Monograph No. 14.

Wilde, Louis L. (1980) The economics of consumer information acquisition. J. Business, 53, 5143-58.

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Table 1.
Variables and descriptive statistics, CAT data, 1985-87

NAME	Description	MEAN	VARIANCE	MINIMUM	MAXIMUM
	Importance of				
IMPPROT	--protein	3.63	0.436	0.00	4
IMPZINC	--zinc	2.35	1.742	0.00	4
IMPCARB	--carbohydrates	2.86	1.082	0.00	4
IMPCAL	--calcium	3.81	0.281	0.00	4
IMPRIBF	--riboflavin	2.21	2.103	0.00	4
IMPVITD	--vitamin D	3.11	1.254	0.00	4
IMPPOT	--potassium	3.22	1.061	0.00	4
	Agree/Disagree				
DPPNUT	--Dairy provides nutrients	8.38	4.752	1.00	10
DPTOOF	--Dairy too fattening	6.13	4.000	1.00	10
MNCDIET	--Not getting enough calcium	5.76	11.290	1.00	10
TABGCDP	--Too much bother from dairy	6.66	9.734	1.00	10
DPMNPC	--Dairy ..more nut/calories	5.73	5.954	1.00	10
AFNCFDP	--Females need dairy.. calcium	8.23	5.954	1.00	10
MSCAL	--Milk is a better source calcium	7.22	7.618	1.00	10
DPHTMC	--Dairy have too much calcium	6.69	7.673	1.00	10
BWCTAB	--Best not to take calcium supplement	5.77	10.498	1.00	10
NONFCAL	--Never outgrow the need for calcium	8.53	7.076	1.00	10
	Income				
DHHINC1	Under $15,000	0.1622	0.136	0.00	1.00
DHHINC2	$15,000-$24,999	0.2190	0.171	0.00	1.00
DHHINC3	$25,000-$39,999	0.2947	0.208	0.00	1.00
DHHINC4	$40,000 and over	0.2283	0.176	0.00	1.00
DHHINC5	Don't know	0.0958	0.087	0.00	1.00
	Age				
DUMAGE1	18-24	0.1582	0.133	0.00	1.00
DUMAGE2	25-34	0.3862	0.237	0.00	1.00
DUMAGE3	34-54	0.4556	0.248	0.00	1.00
DEDUCN	High school education	0.8942	0.095	0.00	1.00
DEMPFULL	Full time worker	0.5040	0.250	0.00	1.00
DEMPPART	Part time worker	0.1449	0.124	0.00	1.00
DMARSTAT	Not married	0.3121	0.215	0.00	1.00
DCHILD18	Presence of Children under 18	0.6085	0.238	0.00	1.00
DBLACK	Being Black	0.0975	0.088	0.00	1.00
DORACE	Other race	0.0584	0.055	0.00	1.00
SCIMP3	Importance index	4.3371	3.289	0.00	7.00
SCAGR3	Health awareness index	3.7273	3.644	0.00	10.00
SCIPAG	Attitude and Awareness index	8.0644	8.096	0.00	17.00
DADVCAL	Advertising exposure	0.7614	0.182	0.00	1.00
DADTV	TV ad exposure	0.4646	0.249	0.00	1.00
DADTHER	Other than TV ad exposure	0.3371	0.224	0.00	1.00
CCDAIRY	Dairy consumption	37.6730	323.74	0.00	90.00
CMILK	Milk Consumption	20.5020	145.32	0.00	30.00
CCHEESE	Cheese consumption	13.6170	92.998	0.00	30.00
	Seasonal dummies and trend				
TIME	time	11.1030	51.522	1.00	24.00
SUMMER		0.2423	0.1837	0.00	1.00
SPRING		0.2253	0.1746	0.00	1.00
FALL		0.2917	0.2067	0.00	1.00
WINTER		0.2407	0.1828	0.00	1.00

Table 2.
Maximum likelihood probit estimates for recall of different sources of advertising information, CAT data (1985-87)

VARIABLE	DADTV	DADTHER
	coefficient	coefficient
DHHINC2	0.1957**	0.1818**
DHHINC3	0.2051**	0.2768**
DHHINC4	0.2353**	0.3301**
DHHINC5	-0.0426	-0.0518
DEDUCN	0.3048**	0.3413**
DUMAGE2	-0.0245	0.0264
DUMAGE3	-0.2937**	0.0447
DMARSTAT	-0.1010*	-0.1024*
DEMPFULL	-0.0738	-0.0447
DEMPPART	0.0802	0.1600*
NOV85	0.1612**	
DEC85	0.3267**	
FEB86	0.2984**	
MAR86	0.3821**	
APR86	0.2814**	
MAY86	0.5689**	
NOV86	-0.0008	
DEC86	-0.2733**	
JAN87	-0.5637**	
FEB87	0.0242	
MAR87	0.0747	
APR87	-0.1815	
MAY87	-0.5000**	
JUN87	-0.1199	
TIME		0.0444**
TIMESQ		-0.0013**
CONSTANT	-0.3514**	-0.0251
LOG L	-1974.1	-1598.5
LR	190.06	95.76
R-Square	0.0615	0.0315
% of correct predictions	0.60	0.76

*denotes significant at 10% level.
**denotes significant at 5% level.

Table 3.
Coefficient Estimates for the Attitudes and Consumption Equations, CAT Data, 1985-87

VARIABLE	SCIPAG	CCDAIRY	CMILK
	coefficient	coefficient	coefficient
DHHINC2	0.132	-0.347	0.116
DHHINC3	-0.048	0.089	0.113
DHHINC4	0.121	-0.022	-0.546
DHHINC5	-0.347*	0.647	0.356
DBLACK	0.462**	-7.645**	-4.276**
DORACE	-0.235	1.100	0.571
DUMAGE2	0.706**	-1.898*	-1.561**
DUMAGE3	1.242**	-5.355**	-2.811**
DEMPFULL	-0.376**	-1.605**	-2.098**
DEMPPART	-0.197	-2.184**	-1.705**
DEDUCN		1.742	0.529
DMARSTAT		0.086	0.085
DCHILD18		3.339**	2.393**
ADTVIMR	0.119*		
ADOTHIMR	0.296**		
SCIPAG		0.726**	0.314*
SPRING		-0.447	-0.500
SUMMER		-0.091	0.022
FALL		-0.372	0.249
R-Square	0.0395	0.0503	0.0383

*denotes significant at 10% level.
**denotes significant at 5% level.

Estimated Income, Age, and Selected Demographic Characteristics Elasticities for Food Groups from USDA's 1985 and 1986 Continuing Survey of Food Intakes by Individuals

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Data on 2,551 women 19 to 50 years of age, from USDA's Continuing Survey of Food Intakes by Individuals 1985 and 1986, were utilized to estimate elasticities for income, age, household size, and other socioeconomic characteristics for several food groups, using the Tobit regression specification. The estimates suggest substantial changes in demand for several foods with the currently anticipated demographic shifts.

In recent years, predictions on the economic climate of the 1990's and the early part of the twenty-first century have focused on the aging of the population, as well as on other anticipated shifts in the demographic make-up of the U. S. population. In particular, these sociodemographic shifts are expected to have a major impact on the food chain. For example, in a recent article in Choices, Senauer (1989) discussed the "Major Consumer Trends Affecting the U.S. Food System." First on his list were the anticipated "Demographic Changes ... By the year 2000, the median age of the population will increase from 31.8 in 1986 to 36." Household size is smaller (and may continue to decline), ... six out of ten Americans will live in the Sunbelt," and the Hispanic population will increase by about 50 percent from 19 million currently to 30 million by the year 2000.

Clearly, it is important to assess the likely quantitative impact of these sociodemographic trends on food consumption in the United States. Several past studies have demonstrated the link between these factors and food consumption (Hama & Chern; Smallwood & Blaylock; Basiotis, Brown, Johnson & Morgan; Morgan; Capps & Havlicek; Morgan, Johnson, Lee & Goungetas). However, being economic studies, their primary focus has been on estimating and reporting income elasticities. In addition, most such studies utilized expenditures on food (Hama & Chern; Smallwood & Blaylock), nutrient consumption (Basiotis et al.; Morgan), or highly aggregated food groups (Capps & Havlicek; Morgan et al.) as the dependent variable(s).

This study estimated income, household size, age, body weight, ethnic origin, race, and geographic region elasticities of 45 food group categories at various levels of aggregation. Data came from two nationally representative samples of women 19 to 50 years of age (USDA). To account for the limited dependent variables problem of zero reported food group intakes, the Tobit specification was employed (Amemiya; Fomby, Hill & Johnson; Maddala; Tobin). Selection of variables was guided mainly by previous applied economic research and data availability. The findings may be of interest to those at all levels of the food chain, nutritionists and nutrition educators, some government agencies, public health professionals, academics, and the public.

Theoretical Issues and Statistical Model

Applied econometric models of demand for food are typically guided by economic theory, usually either classical or household production theory. Choice of the appropriate theoretical framework can be very important for estimation because severe statistical biases may result if the researcher does not choose prudently. In practice, however, the researcher is usually limited by the available data. This has resulted in approximately the same set of available variables being included in such models regardless of theoretical framework.

A consequence of this is that, depending on choice of theoretical framework, a given available variable may be thought of as being a proxy for several unrelated and unobservable economic variables. For example, the observed variable "age" can stand as a proxy for human capital in the form of experience. It affects the demand for a food group through its effects on the household production function. It can also be thought of as proxy for preferences unique to cohorts. As such it would affect the demand for a food group through the utility function in either theoretical framework. As an additional example, the presence of children could be a proxy for preferences (affecting the utility function), availability of time (affecting the opportunity cost of time), or availability of household labor performed by older children.

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Thus, interpretation of estimated coefficients will be affected by choice of theoretical framework. However, assuming that the same observable (proxy) variables are included in the analysis, the estimates themselves will not be affected by choice of theoretical framework.

These observations are relevant to the present study since the specification is essentially exploratory and no explicit theoretical framework was employed. Instead, it was guided mainly by past applied research and data availability. Since this study was intended to estimate the net impact of sociodemographic factors on food group consumption, an ad hoc reduced form specification was used.

Specifically, food group consumption was related to household income, household size, and a number of other sociodemographic characteristics. Because of the presence of zero reported intakes, econometric methods such as Ordinary Least Squares (OLS) could not be used since the resulting parameter estimates would be biased and inconsistent (Tobin; Fomby et al.). The Tobit regression model, on the other hand, yields consistent parameter estimates.

The Tobit model is defined as follows:

$$Y^*_i = X_i b + e_i \qquad (1)$$

where X_i is a vector of explanatory variables, b is a vector of unknown coefficients, and the e_i's are assumed independently and identically normally distributed with mean zero and variance s^2. The Y^*_i's are assumed unobservable or latent variables which are related to the observed dependent variables Y_i as follows:

$$Y_i = \begin{cases} 0 & Y^*_i <= 0 \\ Y^*_i & Y^*_i > 0 \end{cases}$$

Properties of the Tobit model are discussed extensively elsewhere (Cox, Ziemer & Chavas; McDonald & Moffitt). The model was estimated by Maximum Likelihood using the Limdep version 5.1 statistical software package (Greene). Since the estimated tobit coefficients are not the marginal propensities to consume as in OLS, a Limdep subroutine written by the author was utilized to calculate elasticities appropriately.

Data and Variables Definitions

Data from USDA's 1985 and 1986 Continuing Survey of Food Consumption by Individuals (CSFII) were used in this analysis. The CSFII was the first nationwide survey to collect dietary and other information on U.S. households and individuals within sample households year by year. The samples consisted of women 19 to 50 years of age and their children ages 1 to 5 and were drawn anew each year. Even though information was collected from each participating woman and child for up to six times at approximately 2-month intervals, this study utilized information obtained through personal interview on the first day of the surveys. Food intake information was collected by a 24-hour dietary intake recall. In addition, other information on the socioeconomic characteristics of the household was collected from the person deemed most knowledgeable about the household food purchasing and preparation patterns. In order to avoid within-household correlations, data from only one woman per household was included in the analysis, the respondent, if age/sex eligible, or otherwise, the oldest eligible individual. The combined 1985 and 1986 sample contained information from 2,693 households with at least one eligible female member. Deletion of incomplete records resulted in 2,551 women being included in the analysis.

The food group categories utilized as dependent variables and reported here were:
beef, pork, frankfurters/sausages/lunchmeats, poultry, chicken, meat mixtures, total meat/poultry/fish/shellfish, total milk/milk products, total fluid milk, whole milk, fluid lowfat/skim milk, cream/milk deserts, cheese, eggs, legumes/nuts/seeds, total vegetables/fruits, total vegetables, white potatoes, tomatoes, other vegetables, total grain products, bread rolls/biscuits, other baked goods, total cereals/pastas, ready-to-eat cereals, grain mixtures, total fats/oils, table fats, salad dressings, total sugar/sweets, sugars, candy, total fruits, total citrus fruits/juices, citrus juices, total other fruit mixtures/juices, other fruits/mixtures, total alcoholic beverages, total nonalcoholic beverages, coffee, tea, total carbonated soft drinks, regular carbonated soft drinks, diet carbonated soft drinks, and total beverages. The following food group categories were also included in the analysis but the maximum likelihood algorithm did not converge and thus are not reported here: Lamb/veal/game, organ

meats/mixtures, fish/shellfish, yogurt, dark-green vegetables, deep-yellow vegetables, dried fruits, apples, bananas, noncitrus juices, beer/ale, total fruit drinks/ades, regular fruit drinks, and diet fruit drinks.

The independent variables included in the model were annual household income including the food stamp bonus income if applicable, tenancy status, food stamp program participation, household size, headship, presence of child one to five years of age, geographic region, urbanization, respondent's age, ethnic origin, race, education, self-reported weight, self-reported height, and self-reported health status, smoking status, pregnancy or lactation, intake of vitamin or mineral supplements, and the ratio of usual number of meals away from home to the usual number of meals at home per week.

Limitations

As in all applied econometric studies, several limitations must be borne in mind when interpreting the results reported here. To begin with, the nature of the study was exploratory. Past analyses on the demand for food guided model specification and selection of variables. Thus the possibility of committing gross errors was reduced.

Several problems remain, however. A major limitation was lack of a specific theoretical framework to guide the analysis and to help with interpreting the results. Analyzed data were limited to a subpopulation, women 19 to 50 years of age, even though the purpose of the analysis was to estimate likely impacts on the national food chain. The Tobit model may not be an appropriate statistical tool for analyzing disaggregated food group consumption (Cragg; Haines, Guilkey & Popkin; Lin). Analysis was done on an equation-by-equation basis, as opposed to a more appropriate systems approach. As market prices were not available, region/urbanization differences were used as proxies for price variation. Given the size and number of these limitations, results should be interpreted with caution. Until further confirmation, they should be considered preliminary.

Results

Estimated elasticities are shown in Tables 1 and 2. The tables show nine key independent variables; the median for age and household size (34.0 years and 3.0 members respectively), and the mean for income, or proportion of the sample in the ethnic origin, race and region categories, weighted to reflect the population distribution. Estimated elasticities are not given if the associated parameter estimate was not significant at the 0.05 level. Table 1 shows that for most food group categories the independent variables under examination could not be shown to have a statistically significant impact. However, no attempt was made to assess the power of these tests.

Income had a moderate impact on the consumption of several food groupings. It had a positive impact on the consumption of meat mixtures, cream/milk desserts, total fruits, fruit mixtures/juices, alcoholic beverages, coffee, and diet carbonated soft drinks. Negative income elasticities were estimated for beef, frankfurters/sausages/lunchmeats, and white potatoes. The negative income elasticity for beef is possibly due to the aggregation of several beef products of heterogeneous quality and price, e.g. hamburger and steak. It may also be that income is serving as a proxy for such unobservable variables as nutrition education and awareness.

Household size had a positive impact on the consumption of only three food groupings: sugars, total sugars/sweets, and regular carbonated soft drinks. On the other hand, negative consumption elasticities with respect to household size were estimated for total vegetables/fruits, other vegetables, total fruits, total fruit mixtures/juices, other fruits/mixtures, total alcoholic beverages, and diet carbonated soft drinks.

Age of the female respondent was estimated to have a number of significant impacts. Some of the largest (>=.5) positive estimated elasticities were for legumes/nuts/seeds, sugars, non-citrus fruits/fruit mixtures/fruit juices, and coffee. Some of the largest negative elasticities were for candy, other vegetables, and regular carbonated soft drinks.

Self-reported body weight, on the other hand, seemed to have numerous significant elasticities of the opposite sign to those of age. Large (>=.5) positive elasticities were estimated for poultry, chicken, and diet carbonated soft drinks. Large negative elasticities were estimated for whole milk, total cereals/pastas, and total alcoholic beverages.

Table 2 shows the proportions and the estimated elasticities of the food grouping categories with respect to the discrete variables in the model. These elasticities would be interpreted as usual. For example, in column 1 of Table 2, the mean proportion of hispanic households was six percent. The corresponding estimated elasticity

Table 1. Estimated Income, Household Size, Age, and Weight Elasticities for 45 Food Group Categories, CSFII 1985, 1986 Data, Women 19-50 Years of Age, N=2,551

	INCOME (Mean= $27,199)	HSHLDSZ (Median= 3 Indls)	AGE (Median= 34 yr)	WEIGHT (Mean= 64.4 kg)
TOT MEAT,PLTRY,FSH,SHLL	- [a]	-	-	0.16
BEEF	-0.19	-	-	-
PORK	-	-	-	-
FRANKS,SSGS,LUNCHMEATS	-0.2	-	-	-
POULTRY	-	-	-	0.83
CHICKEN	-	-	-	0.8
MEAT MIXTURES	0.22	-	-	-
TOT MILK & MILK PRODS	-	-	-0.22	-
TOT FLUID MILK	-	-	-	-0.35
WHOLE MILK, FLUID	-	-	-	-0.88
LOWFAT & SKIM MILK	-	-	-	-
CREAM & MILK DESERTS	0.19	-	-	-
CHEESE	-	-	-	-
EGGS	-	-	0.5	-
LEGUMES,NUTS,SEEDS	-	-	0.66	-
TOT GRAIN PRODUCTS	-	-	-	-0.25
BREAD,ROLLS,BISCUITS	-	-	-	-
OTHER BAKED GOODS	-	-	-	-0.41
TOT CEREALS & PASTAS	-	-	0.45	-0.66
READY TO EAT CEREALS	-	-	-	-
GRAIN MIXTURES	-	-	-	-
TOT FATS & OILS	-	-	0.34	-0.32
TABLE FATS	-	-	0.39	-0.41
SALAD DRESSINGS	-	-	-	-0.38
TOT SUGAR & SWEETS	-	0.19	-	-
SUGARS	-	0.24	0.58	-0.37
CANDY	-	-	-1.22	-
TOT VEGS & FRUITS	-	-0.12	-	-
TOTAL VEGGIES	-	-	-	-
WHITE POTATOES	-0.13	-	-	-
TOMATOES	-	-	-0.5	-
OTHER VEGGIES	-	-0.17	0.33	-
TOTAL FRUITS	0.14	-0.25	0.33	-
TOT CITRUS FRUIT&JUICES	-	-	-	-
CITRUS JUICES	-	-	-	-
TOT OTHR FRUIT,MIXT,JCS	0.17	-0.23	0.54	-
OTHER FRUIT & MIXTURES	-	-0.44	0.92	-
TOTAL BEVERAGES	0.06	-	-	-
TOT ALCOHOLIC BEVERAGES	0.57	-0.65	-	-1.31
TOT NONALC BEVERAGES	-	-	0.18	-
COFFEE	0.12	-	1.68	-
TEA	-	-	-	-
TOT CARB SOFT DRINKS	-	-	-0.89	0.66
REG CARB SOFT DRINKS	-	0.25	-1.25	-
DIET CARB SOFT DRINKS	0.27	-0.4	-	1.75

[a] Dash means corresponding Tobit coefficient not significant at .05 level

Table 2. Estimated Ethnic Origin, Race, and Region Elasticities for 45 Food Group Categories, CSFII 1985, 1986 Data, Women 19-50 Years of Age, N=2,551

	HISPNC (Mean= 0.06)	BLACK (Mean= 0.09)	OTHER (Mean= 0.05)	SOUTH (Mean= 0.33)	WEST (Mean= 0.22)
TOT MEAT,PLTRY,FSH,SHLL	- a	-	0.01	-	-0.02
BEEF	-	-	-	-	-
PORK	-	0.04	-	0.13	-
FRANKS,SSGS,LUNCHMEATS	-	-	-	-	-
POULTRY	0.02	0.06	-	-	-
CHICKEN	0.03	0.06	-	0.1	-
MEAT MIXTURES	-	-0.03	0.02	-	-
TOT MILK & MILK PRODS	-0.01	-0.04	-	-0.07	-
TOT FLUID MILK	-	-0.06	-	-0.14	-
WHOLE MILK, FLUID	-	-	-	-0.24	-0.15
LOWFAT & SKIM MILK	-0.04	-0.16	-0.03	-	0.08
CREAM & MILK DESERTS	-	-	-	-	-
CHEESE	-0.03	-0.05	-0.02	-	-
EGGS	-	0.04	-	-	-
LEGUMES,NUTS,SEEDS	-	-0.04	0.03	-	-
TOT GRAIN PRODUCTS	-	-	0.01	-	-
BREAD,ROLLS,BISCUITS	-0.01	-0.01	-0.01	-0.04	-0.03
OTHER BAKED GOODS	-0.02	-0.03	-0.01	0.06	-
TOT CEREALS & PASTAS	-	0.05	0.06	-0.08	-
READY TO EAT CEREALS	-	-0.05	-0.04	-	-
GRAIN MIXTURES	-	-	-	-	-
TOT FATS & OILS	-0.01	-0.03	-0.02	-0.04	-
TABLE FATS	-0.02	-0.04	-0.03	-0.12	-
SALAD DRESSINGS	-	-	-0.02	-	0.05
TOT SUGAR & SWEETS	-	-	-	-	-
SUGARS	-	-	-	-	-0.05
CANDY	-	-	-	0.15	0.09
TOT VEGS & FRUITS	-	-	-	-0.03	-
TOTAL VEGGIES	-	-	-	-	-
WHITE POTATOES	-	-0.04	-	-	-
TOMATOES	-	-	-	-0.1	-
OTHER VEGGIES	-	-	0.01	-	-
TOTAL FRUITS	-	-	-	-0.07	-
TOT CITRUS FRUIT&JUICES	0.03	0.03	0.02	-0.14	-0.05
CITRUS JUICES	0.03	0.04	0.02	-0.14	-0.01
TOT OTHR FRUIT,MIXT,JCS	-	-	-	-	0.05
OTHER FRUIT & MIXTURES	-	-	-	-	-
TOTAL BEVERAGES	-0.01	-0.03	-	0.05	-
TOT ALCOHOLIC BEVERAGES	-	-	-	-0.13	-
TOT NONALC BEVERAGES	-0.01	-0.04	-	0.06	-
COFFEE	-	-0.06	-	-0.11	-0.06
TEA	-0.03	-0.05	-	0.26	-
TOT CARB SOFT DRINKS	-	-0.03	-0.01	0.12	-
REG CARB SOFT DRINKS	-	-	-	0.16	-
DIET CARB SOFT DRINKS	-0.03	-0.08	-0.05	-	-

a Dash means corresponding Tobit coefficient not significant at .05 level for poultry consumption was 0.02. Thus, hypothetically, a 100 percent increase in the proportion of hispanic households would result, ceteris paribus, in a 2 percent increase in the total consumption of poultry. Thus, even though there were numerous statistically significant estimated elasticities with respect to the ethnic origin, race, and regional variables (Table 2), in practical terms projected shifts in the population with respect to these variables were estimated to have relatively minor impacts on the consumption of the food group categories examined here. Some exceptions may be an expected decrease in the consumption of milk by blacks and of whole milk in the western region and an increase in tea and total carbonated and regular carbonated soft drinks in the south.

Summary and Conclusions

An exploratory model of food group consumption was estimated in an attempt to gain some insight about the likely impacts on food group consumption of commonly anticipated socio-demographic changes in the United States population. To this end a reduced-form Tobit regression model was fitted for each of 59 food group categories, of which 45 were successfully estimated. Although the analysis was guided by past research on food consumption, a number of limitations remained. Most notable perhaps were the absence of a well-defined theoretical framework and employment of data from a subpopulation (women 19 to 50 years of age). Thus, results should be viewed with extreme caution and considered preliminary, at least until the analysis is repeated using data from the 1987-88 Nationwide Food Consumption Survey, which is representative of the whole U.S. population.

Nevertheless, it was found that age and body weight (which would be expected to increase, on average, as the population ages) had the highest relative effects on food group consumption. Some expected trends due to the aging of the population might be increased consumption of fruit, coffee, and nonalcoholic beverages and decreased consumption of regular carbonated soft drinks.

The interpretation of the age effects was somewhat problematic since likely cohort effects could not be separated out from pure aging effects. An example could be coffee consumption. Its estimated age elasticity was high at 1.68. However, this probably reflected a cohort effect which cannot be expected to continue as the population ages. Perhaps some of the effects of the aging of the population were better captured by the estimated body weight elasticities. Assuming that average body weight will increase with the predicted average population age increase, consumption of poultry, chicken, and diet carbonated soft drinks will increase. On the other hand, consumption of whole milk, cereals and pastas, other baked goods, total fats, oils in general, sugars, and alcoholic beverages will tend to decrease. If people migrating to the Sun Belt adapt their eating habits to those of the local residents, some increases in the consumption of pork, candy, tea, and regular carbonated soft drinks and decreases in the consumption of whole milk, table fats, citrus fruits, alcoholic beverages, and coffee may be expected, ceteris paribus.

References

Amemiya, T. (1985) Advanced Econometrics. Cambridge, Mass: Harvard U. Press.

Basiotis, P. P., Brown, M., Johnson, S. R., & Morgan, K. J. (1983) Nutrient Availability, Food Costs, and Food Stamps. Am. J. Agr. Econ. 65, 685-693.

Capps, O. Jr., & Havlicek, J., Jr. (1984) National and Regional Household Demand for Meat, Poultry, and Seafood: A Complete Systems Approach. Can. J. Agr. Econ. 32, 93-101.

Cragg, J. G. (1971) Some Statistical Models for Limited Dependent Variables with Application to Demand for Durable Goods. Econometrics. 39, 829-44.

Cox, T. L., Ziemer, R. F., & Chavas, J. (1984) Household Demand for Fresh Potatoes: A Disaggregated Cross-Sectional Analysis. West J. Agr. Econ. 9, 41-57.

Fomby, T. B., Hill, C. R., & Johnson, S. R. (1984) Advanced Econometric Methods. New York: Springer-Werlag.

Greene, W. (1989) LIMDEP. Graduate School of Business, New York University.

Haines, P. S., Guilkey, D. K., & Popkin, B. M. (1989) Modeling Food Consumption Decisions as a Two-Step Process. Am. J. Agr. Econ. 71, 543-552.

Hama, M. Y., & Chern, W. S. (1986) Food Expenditure and Nutrient Availability in Elderly

Households. *J. Consumer Affairs*. *22*(1), 3-19.

Lin, T. F., & Schmidt, P. (1983) A Test of the Tobit Specification Against an Alternative Suggested by Cragg. *Rev. Econ. Statist*. *65*, 174-77.

Maddala, G. S. (1983) *Limited Dependent and Qualitative Variables in Econometrics*. Cambridge: Cambridge University Press.

McDonald, J. F., & Moffitt, R. A. (1980) The Uses of Tobit Analysis. *Rev. Econ. and Statist*. *62*, 318-21.

Morgan, K. J., Johnson, S. R., Lee, Y. Y., & Goungetas, B. P. (1985) Use of 12 Groups in Foods in Households Differing in Size, Income and Receipt of Food Stamps. *J. Consumer Studies Home Econ*. *9*, 113-131.

Morgan, K. J. (1986) Socioeconomic Factors Affecting Dietary Status: An Appraisal. *Am. J. Agr. Econ*. *68*, 1240-1252.

Senauer, B. (1989) Major Consumer Trends Affecting the U.S. Food System. *Choices*. *Fourth Quarter*, 18-21.

Smallwood, D., & Blaylock, J. (1981) *Impact of Household Size and Income on Food Expenditure Patterns*. Washington, DC: U.S. Department of Agriculture, ESCS Tech. Bull. 1650.

Tobin, J. (1958) Estimation of Relationships for Limited Dependent Variables. *Econometrica*. *26*, 24-36.

U.S. Department of Agriculture, Human Nutrition Information Service. (1987) *Nationwide Food Consumption Survey, Continuing Survey of Food Intakes by Individuals*. Report No. 86-1.

BOX-JENKINS FORECASTS OF PERISHABLE FOODS: IS THERE POTENTIAL CONSUMER BENEFIT?

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The ability of supermarkets to forecast demand accurately for highly perishable products can help to minimize their operating costs. Lower costs can be passed on to consumers via the contestable nature of retail food markets. This paper reports on a preliminary analysis of the Box-Jenkins methodology for scan data for fresh ground beef and roasts. Forecast accuracy varies suggesting that supermarkets will need to employ more sophisticated techniques in order to control inventories to match demand more closely.

Food consumption continues to be an important component of consumer well-being. With respect to retail sales, food comprised 20.4 percent of the total in 1989, and only motor vehicle dealers had a larger share (22 percent) (U. S. Department of Commerce, 1990). Blissard and Blaylock (1990) have shown that food expenditures can serve as a means for measuring income distribution. Food retailing remains very competitive, not only within the food for home consumption category, but also, within the food away from home category and between these two categories. Despite the decline in the pounds per capita of red meat consumption per year, fresh beef is an important component of the consumer's food dollar. For example, in 1988, per capita pounds consumed of beef and poultry were 68.2 and 57.1, respectively (U. S. Department of Agriculture). Furthermore, the margins of supermarkets on fresh beef are relatively high in comparison to other departments (FM Business Publications, 1990). Not only is fresh beef a highly perishable product, it is a significant portion of consumers' food expenditures, and it is a major contributor to supermarket profits. To the extent that the demand for fresh meat can be predicted, there is potential for reducing operating costs and, possibly, to pass the savings on to consumers.

One way of accomplishing this could be through the use of scan data generated by computer assisted checkouts. This application of scanners was touted as the supermarket's management tool of the future. However, while some progress has been made, the industry lags behind others in using these data (McLaughlin and Lesser, FM Business Publications, 1989). There are several reasons for this. First, the volume of data is much larger than that of most other retailers (Capps, 1987). Second, many of the foods do not have Universal Product Codes (UPCs). Most are in the fresh produce, fresh meat, bakery, and deli departments. They comprise the most costly items to carry due to spoilage, and they generate a significant portion of revenue and profits (approximately 47 percent of supermarket sales) (FM Business Publications, 1990). These products are prepared in each store, so there is the additional complexity of assigning bar codes at the individual supermarket level. Furthermore, having to generate specific bar codes makes it more difficult to adapt external, UPC-oriented software to a specific chain. Third, variable weight items, which do not occur with other retail goods, add to the complexity (Eastwood, 1989).

Despite these problems, agricultural economists are beginning to use scan data to conduct demand analyses (e.g., Capps 1989; Capps and Nayga, 1990; Eastwood, Gray, and Brooker, 1990; Jensen and Schroeter, 1989; Kesavan, Jensen, and Johnson, 1989). These studies have centered on the structure of consumer demand, direct and cross-price responses, and advertising effects. While demand equations are based upon the economic theory of consumer behavior, most supermarket chains do not have extensive information on customers. This means that they do not have data on the requisite independent variables to estimate demand equations or to use them to make forecasts.

The Box-Jenkins Methodology

Box-Jenkins is an entirely different approach to forecasting than applied demand analysis. The latter assumes the quantity demanded is a function of prices, income, and demographic variables and uses estimated demand equations to forecast. Box-Jenkins, on the other hand, assumes that a time-series, such as the quantity demanded, contains the needed information to make projections. That is, rather than building a causal relationship (as with demand equations), time series of the variable of interest (demand) can be extrapolated into subsequent periods based on the historic record. Blends of the two approaches are beginning to be used.

The methodology uses the available time series to generate a relationship composed of a moving average of past values and/or an autoregressive error (Grainger and Newbold, 1986). Initially, the time series is analyzed

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The authors wish the thank Dr. Daniel L. McLemore for his helpful comments on the research. However, responsibility for the paper rests with the authors.

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to determine if it is stationary. Stationarity simply requires there to be no trend in the data. Should one be present, then it becomes necessary to compute first differences, continuing until stationarity is achieved. Then, the technique involves experimentation with various lag structures of the stationary series. Identification of the best fit is based upon several criteria. These are the lowest Akaie Information Criterion (AIC)(Harvey, 1981), which is based on the log-likelihood function and the number of free parameters, the computed chi square of lagged autocorrelations, plots of the autocorrelations, and the significance of the autocorrelation coefficients.

Data

Scan data from five local supermarkets that are part of a multiregional chain comprise the data. These store level data represent weekly item movement. Item movement refers to the number of times scanners read respective bar codes. For variable weight items this does not translate directly into quantity or sales information. However, assuming that the distribution of package sizes does not change from store to store or week to week, variations in item movements represent variations in quantities and sales. Information from the retailer indicates that this is the case. For example, the distribution of package sizes of ground chuck does not change very much across stores or weeks.

A weekly time period has several advantages. Much of management's decision making is on a weekly basis. Advertising usually is by week. Consumers' shopping patterns generally follow a seven day period as well. A five store average of weekly item movement is used below.

The time period is May 14, 1988 through December 30, 1989. Missing data in two instances necessitated the use of estimates. These are the averages of the immediately preceding and following weeks. Two subperiods were created to allow for a trial forecast period. The first comprised the historical record for estimating the relationships. It ended with September 30, 1989. This was to provide enough time to examine trial forecasts for several weeks prior to the extended holiday season. Two week forecasts were generated because this period is considered to be most appropriate for highly perishable items, reordering, and labor scheduling.

Two categories of beef were used in this initial work. One is fresh ground beef, and the other is beef roasts. The former could be characterized as a high volume product, whereas the latter displays more fluctuation (as shown below). Thus, two patterns of sales are involved. An additional consideration is that some inventory management programs, which include sales forecasting algorithms, are designed to work with UPC master files, thereby omitting nonUPC bar code foods. Figures 1 and 2 present the weekly item movements for ground beef and roasts.

Results

Diagnostics led to the inference that the ground beef series is stationary. However, the roast series autocorrelation pattern is wave-like and does not dampen, which is characteristic of a nonstationary series. First differencing produced a stationary series. Since the Box-Jenkins technique involves experimentation with various lag structures, several were tried. Identification of the best fit was based on the criteria outlined above. Both stationary fresh beef series have autoregressive forms.

Table 1 presents the estimated functions. The statistics lead to inferences of significant relationships. Inspection of Figures 1 and 2

Table 1. Box-Jenkins Results for Ground Beef and Roasts[a]

$$\underset{}{GB_t} = 1 - \underset{(-4.85)}{.50B(1)} + \underset{(2.01)}{.26B(7)} - \underset{(-1.98)}{.26B(8)}$$

	Autocorrelation	Lag:	6	12	18	24
AIC - 1,112	Chi Square:		2.53	3.81	5.68	12.79

$$R_t - R_{t-1} - 1.00 + \underset{(5.72)}{.66B(1)} + \underset{(3.33)}{.43B(2)} + \underset{(3.72)}{.48B(3)} + \underset{(2.89)}{.33B(4)}$$

	Autocorrelation	Lag:	6	12	18	24
AIC - 942	Chi Square:		1.17	6.94	8.47	10.95

GB_t = ground beef item movement in period t.
R_t = roast item movement in period t.
$B(L)$ = backshift operator of length L.

[a] Computed t values are below respective coefficients in parentheses.

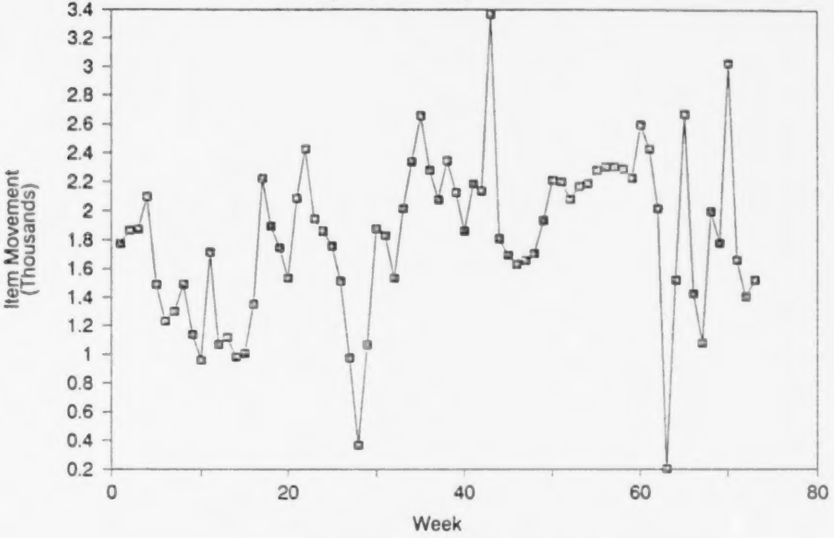


Figure 1. GROUND BEEF ITEM MOVEMENT
May 14, 1989 - Sept. 30, 1990

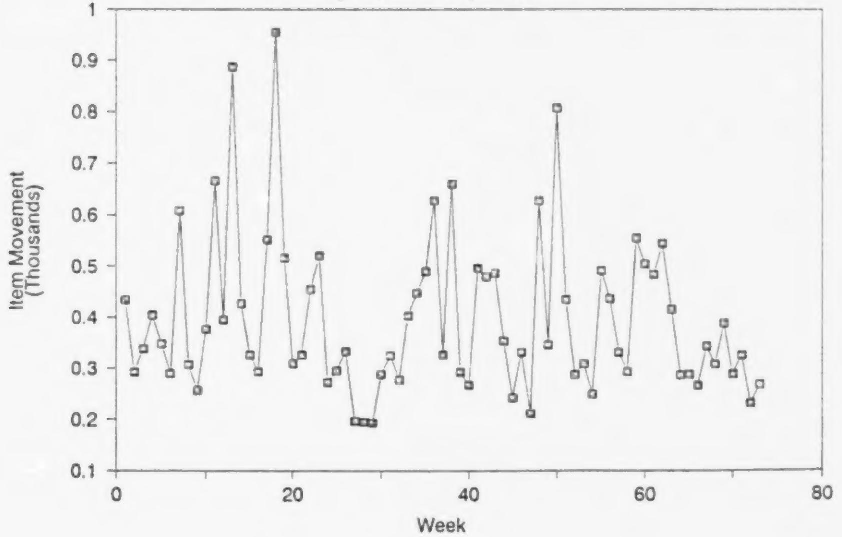


Figure 2. ROAST ITEM MOVEMENT
May 14, 1988 - Sept. 30, 1989

and Table 1 suggests that both ground beef and roasts have stock adjustment patterns. For fresh ground beef, the previous week's sales have a negative impact on the current week's, followed by seven and eight week lags that have positive and negative impacts, respectively. The roast beef relationship is a positive but declining influence over a four week period.

Forecasts

Figures 3 and 4 present the actual and predicted Box-Jenkins item movement forecasts for the estimation subperiod. The mean actual values are 1,815.8 and 395.6 for ground beef and roasts. Corresponding forecast averages are 1,814.8 and 397.0. Coefficients of variation for the respective actual series are .31 and .39, and those for the predicted series are .16 and .22. Average absolute errors are 355.5 and 121.1, respectively. These data indicate that the units of ground beef sold are approximately six times higher than those for roasts, and the variability is relatively higher for roasts. The Box-Jenkins forecasts have somewhat less variability and on average are close to the units sold.

Focusing on turning points, the actual ground beef series has 34 and that for roasts has 48. The respective values for the forecasts are 37 and 39. However, there are only three

Figure 3. BOX-JENKINS FORECAST
Ground (May 14,'88-Sept. 29,'89)

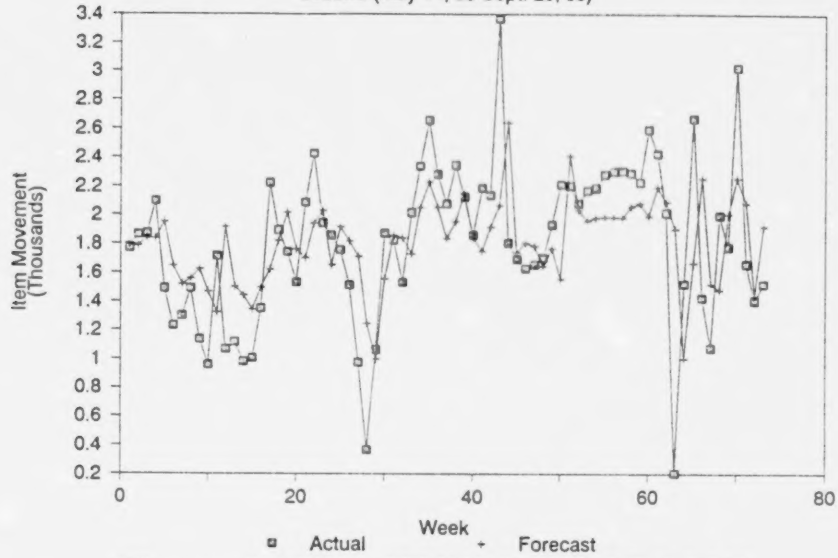
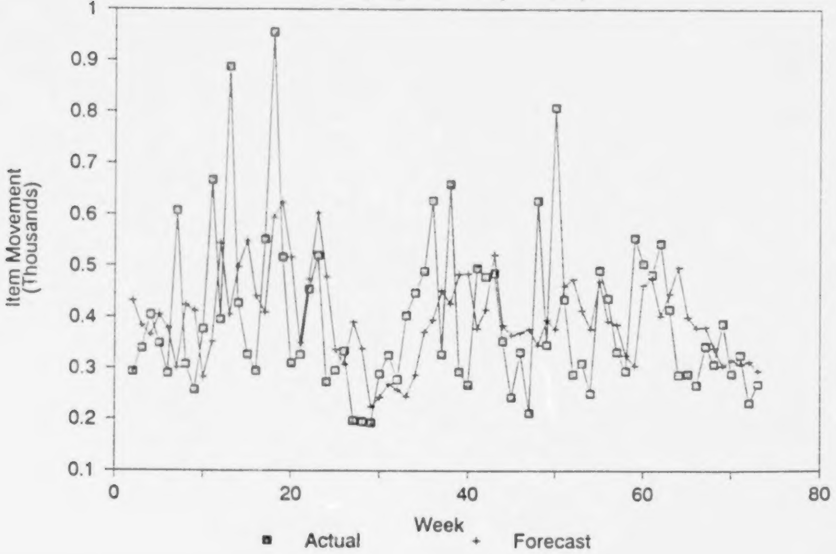


Figure 4. BOX-JENKINS FORECAST
Roasts (May 14, '88-Sept. 29,'89)



and nine matched turning points. The forecasted direction of change (positive or negative) is correct 27 and 29 times, respectively. This information suggests that the Box-Jenkins forecasts are relatively close to the actual values, especially for ground beef, but the functions do not consistently predict small week-to-week changes.

Theil's (1971) inequality coefficient provides a more objective measure of forecast accuracy. The computed I-squared values are .24 for ground beef and .74 for roasts. An inference is that the ground beef forecasts are far superior to no change forecasts, whereas those for roasts are only slightly better. Decompositions of I-squared indicate that the forecast errors contain no bias and that most of the error is due to random fluctuations in both series. This is expected because the Box-Jenkins methodology is designed to pick up the systematic variation. Thus, these results suggest that an appropriate functional form has been identified. Furthermore, they indicate that the ground beef forecasts are quite accurate, whereas, those for roasts are not as good.

Tables 2 and 3 present the two week trial forecasts. This forecast period was chosen to reflect the normal amount of time available to management for forecasting. That is, the store

Table 2. Box-Jenkins Trial Forecasts: Ground Beef

Week	Actual	Trial Forecast 1	2	3	4	5
Oct. 7	3,090	1,754				
14	2,172	1,544	2,203			
21	1,823		2,073	2,058		
28	180			1,569	1,456	
Nov. 4	1,674				2,000	1,444
11	1,227					1,748

Table 3. Box-Jenkins Trial Forecasts: Roasts

Week	Actual	Trial Forecast 1	2	3	4	5
Oct. 7	661	296				
14	443	290	417			
21	312		420	429		
28	362			332	291	
Nov. 4	412				336	361
11	213					447

level scan data must be transmitted to corporate headquarters, analyzed, and forecasts generated. Starting with September 30, two week trial forecasts were obtained. Then the historic record was increased by one week, a new Box-Jenkins equation estimated, and another two week forecast generated. For ground beef the forecasts start at about half the actual value because of a doubling of the actual item movement over the preceding week. The predicted values correctly reflect the direction of change for the first three trial forecasts. Then there is an extremely low week of sales that the Box-Jenkins equation has trouble incorporating due to the lag structure. For roasts the forecasts also start out low because of an unusually high initial week, and the forecasts do not track item movement as well.

Implications

Scan data enable supermarkets to measure accurately customer sales of individual products. When scanners are connected to computer storage devices, time-series data can be generated. The perishable nature of many foods contributes to the marketing costs of these products. If supermarkets could forecast consumer demand for these foods, then inventories could be managed more efficiently, and losses due to spoilage could be reduced. Box-Jenkins attempts to use the historic data to generate forecasts. This is an advantage over forecasts generated by econometric models because supermarkets do not have detailed socioeconomic information on customers.

The results of the preliminary analysis lead to three important implications. First, food demand varies by product, so supermarkets will have to forecast by individual products, as opposed to broader product groups. Second, because of these differences, it will be necessary to develop separate models for products and to revise the forecasting equations as the historic record grows. Third, it will be necessary to utilize more recent advances in Box-Jenkins that involve transfer functions to incorporate exogenous factors. Of particular interest would be advertising and in-store promotions. The potential is present for marketing departments to develop time-series data for advertising and promotions that dovetail with the scan data to accommodate these influences on demand.

To the extent that accurate forecasts can be generated, then purchasing and labor can be scheduled more efficiently. The ensuing cost savings would lead to higher margins. These would be passed along to consumers due to the contestable nature (Baumol, 1982) of local supermarkets. That is, through the competitive environment, or the threat of entry, supermarkets have the incentive to pass along savings to consumers. Given the importance of food in consumer well-being, the benefits could be substantial from reducing losses due to spoilage of perishable foods.

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References

Baumol, W. J. "Contestable Markets: An Uprising in the Theory of Industry Structure," *American Economic Review*, 72(1982):1-15.

Blissard, N. and J. Blaylock. "The Distribution of U. S. Income and Food Expenditures," *Journal of Consumer Affairs*, 23(1989):226-44.

Capps, Oral, Jr. "The Ultimate Source for Demand Analysis?" Working Paper, Texas A&M University, 1987.

________________. "Utilizing Scanner Data to Estimate Retail Demand Functions for Meat Products," *American Journal of Agricultural Economics*, 71(1989):750-760.

________________ and Rodolfo M. Nayga. "Demand for Fresh Beef Products in Supermarkets: A Trial with Scanner Data. Paper presented at the Southern Agricultural Economics Association Annual Meeting, February 5, 1990. Eastwood, David B. "Organizing Scan Data for Market Research." Paper presented as the 30th Annual Conference of the Food Distribution Society, 1989.

FM Business Publications, *Supermarket Business*. New York (September, 1989, October 1989, and October, 1990 issues).

Grainger, C. S. J. and Paul Newbold, *Forecasting Economic Time Series*. New York: Academic Press, 1986.

Harvey, A. C. *Time Series Models*. New York: John Wiley and Sons, 1981.

Jensen, Helen H. and John R. Schroeter, "Estimating Retail Beef Demand Using Household Scanner Data." Paper presented at the AAEA Annual Meetings (1989).

Kesavan, T., H. H. Jensen, and S. R. Johnson, "Dynamic Adjustments for U. S. Meat Demand Using and Error Correction Hypothesis," CARD working paper 88-WP38.

McLaughlin, E. and W. Lesser, "Experimental Price Variability and Consumer Response: Tracking Potato Sales with Scanners." Working Paper, Cornell University, 1986.

Theil, Henri, *Applied Economic Forecasting*. New York. North-Holland, 1971. U. S. Department of Agriculture. *Agricultural Statistics 1989*. GPO, 1989.

Labeling Milk from rBST Treated Cows: Returns to Wisconsin Dairy Farmers from Product Differentiation

Lydia Zepeda and
Robin Douthitt[1]

A model is developed to estimate the returns to Wisconsin dairy farmers if product labeling of milk from cows that are not treated with recombinant bovine somatotropin is adopted.

Introduction

Bovine somatotropin (BST) is a naturally occurring protein hormone which regulates cows' milk production. The development of recombinant DNA technology, afforded scientists the means to develop a synthetic hormone (rBST) that when injected during the cows lactation cycle has experimentally been shown to increase milk production (Tessmann et al.). The Food and Drug Administration has ruled that treated herds' milk is safe for human consumption and they are currently reviewing rBST manufacturer evidence regarding the drugs efficacy and effects on animal health before granting final drug approval.

Although milk from treated animals has been deemed safe by the FDA, surveys indicate that for various reasons, consumers are hesitant to accept dairy products made from treated herd milk. Their apprehension is based not only on concern that future, ill-human health effects will be discovered (Douthitt, 1990), but also on concern that adoption of the technology may negatively impact the small farmer. Further, if the FDA were to approve the use of rBST, consumers have indicated that they would cut back their dairy consumption if they were unable to choose products from untreated herds (McGuirk and Preston, 1990).

Producers and retailers are also concerned about adverse consumer reaction. Survey work of dairy farmers indicates that their primary concern is that this new technology will adversely affect milk prices by increasing production. Their second concern is consumer acceptance of milk from cows treated with rBST (Zepeda, 1988). In addition, some retailers and processors have refused to accept milk from farms involved in rBST experiments (Richards, 1989).

To prevent a decline in consumer dairy product demand resulting from rBST-use aversion, for whatever reasons, numerous options are being considered by policy makers. One option being considered, for example, by the state of Wisconsin is product labeling. By labeling Wisconsin dairy products, as to whether they are made with treated herd milk or not, concerned consumers would have the ability to choose untreated dairy products and thus would not need to reduce their dairy consumption. However, product labeling is not without cost, so the question becomes, if a "premium" were charged to concerned consumers to cover the cost of differentiation through product labeling, (1) what would happen to consumer demand for dairy products; (2) how would labeling affect returns to producers, (3) whether labeling is an economically viable policy alternative, and (4) what premium level would maximize producers' revenue.

Method

To analyze the effects of rBST product differentiation on both the consumer and producer it is first necessary to estimate consumer demand for dairy products. For simplicity, this analysis will focus only on the demand for fluid milk. Demand for milk (Q) is specified as a function of price (P), income (Y) and a vector of household demographic characteristics (X) i.e.:

$$Q = f(P, Y; X). \tag{1}$$

Given price elasticity estimates, consumer response to various unit price premiums ($PREM_i$) can be calculated. Given sample characteristics, and information regarding the proportion of consumers willing to pay different premium levels (a_i), it is possible to predict the changes in the quantities demanded by consumers (due to a premium assessment) and their effect on revenues for fluid milk.

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Finally, it is possible to determine whether product differentiation will improve returns to producers. That is, the premium level, a_1, consumers would be willing to pay for a labeled product is determined. This is accomplished by maximizing the product of weighted price (P_1) and quantity of milk (Q):

$$\text{Max } P_1 * Q(P_1) \qquad (2)$$

where:

$$P_1 = [(1-a_1)*P_{BST} + a_1*P_{NOBST}] \qquad (3)$$

is the weighted average of the market price paid for treated (P_{BST}) and untreated herd milk ($P_{NOBST}=P_{BST}+PREM_1$).

Data and Sample

Since Wisconsin is the leading dairy producing state in the nation, the issue of rBST has been widely covered by the media over the last two years. Having been exposed to information from all sides of the issue, Wisconsin consumers make an ideal population to study potential consumer response to the hormone's commercial use. As such, a telephone survey on these issues was conducted between February 26 and May 9, 1990. In each of 1,056 randomly selected households throughout the state, the adult person (18 years or older) who made most of the household's food purchase decisions was interviewed. The response rate of the survey was 69.2 percent. About 75 percent were women. The average respondent was 46 years old, had one year of education beyond high school, and lived in an urban county (population over 100,000).

Respondents were first asked if they were aware either of the recent Wisconsin controversies surrounding farmers' use of rBST or proposed legislation to label dairy products from treated herds. About 89 percent (n=940) of the respondents were aware of one or the other. Demographic characteristics of the unaware respondents were recorded and the interview concluded. Of the 940 "aware" respondents, 95 percent (n=890) usually purchased some milk each week. About 77 percent (n=687) expressed a preference for milk labeled as having come from either untreated or rBST treated herds.

Consumers who expressed a preference for labeled milk, were asked how much they currently paid for milk, and how much more, if any, they would be willing to pay to have milk labeled. Thus, among milk purchasers, only the 668 respondents expressing a preference (about 77 percent of all milk purchasers) recorded price information.

The sample of respondents used in this analysis are those (1) expressing an awareness of rBST issues, (2) belonging to a milk purchasing household, and (3) reporting complete data. Sixteen of the 890 milk purchasing respondents had missing data on one or more of the variables used in the analysis, thus the final sample size is 874.

The Demand Model

The first step in the analysis is to estimate a demand model for milk. The log of weekly quantities of fluid milk usually purchased is regressed on (1) the log of average price paid per gallon of milk, (2) an indicator variable equalling one if household income was over the state median of about $30,000, and (3) a vector of demographic variables. Demographic variables included number of children under the age of 18 present in the household, respondents' age (logged), and an indicator variable if the respondent was a single individual. One would expect the presence of children to positively influence milk expenditures while respondent age and living alone to negatively influence milk expenditures.

Since the purpose of this analysis is to generalize across all milk purchasing households, it was necessary to correct for any sample selection bias that might be introduced by estimating milk demand only over the sample of consumers with a preference for labeling. Heckman's (1979) sample selection correction procedure was thus implemented. First, probit model parameters were estimated such that the respo/ndent's preference for a labeled product (dependent variable equals one; zero otherwise) was regressed on respondent's age, education, and number of children present in the household. From those results the inverse of the Mill's ratio was calculated and included in the demand equation to correct for any potential sample selection bias. Although number of children present was a significant predictor of whether or not the respondent preferred a labeled product (See Appendix), sample selection bias did not prove important in estimation of the demand model (note Lambda insignificance in Table 2).

Table 2 presents results of the demand equation estimation. The model accounted for about 45 percent of explained variance. All variables are of the expected sign. The indicator variable, income greater than population median (Y > Md), is the only insignificant variable. The policy variable of interest, ln Price, would indicate that milk consumers display a nearly unitary price responsiveness. Specifically, if the price of milk increases by 1 percent, the quantity of milk demanded decreases by .97 percent.

Although their methods are not directly comparable to the present study, Heien and Wessells' (1988) estimated price elasticity of milk demand by U.S. consumers is used to conduct a sensitivity analysis. Using the 1977-78 household food consumption data set on food prices and expenditures, they estimated a price elasticity of demand of -.63 for milk. The differences between their estimates and the ours can be explained in part by changes in demand over time and differences in the two populations' characteristics. The demand for convenience has grown over time, and demographics have changed as well. In addition, Heien and Wessells data was for the U.S. not just Wisconsin, and their definition of milk included yoghurt, buttermilk and chocolate milk which were not included in this survey. Furthermore, their estimation methods utilized a system of food demand rather than a single equation. For all these reasons, their elasticity estimate is more inelastic. It will be useful as a sensitivity measure of the results in the next section.

Results

The price elasticity estimate is used to predict the impact of various premium structures on consumer demand and producer revenues. Table 3 presents results for the untreated cows milk demand under different premium structures. The proportion of consumers who prefer untreated milk for each premium level is calculated from the survey data. The total quantity of milk demanded, expressed in gallons per household per week, is calculated using the elasticity estimate and associated price for each premium level. Total revenue expressed in dollars per household per week is calculated for each premium level and weighted by the percent of consumers (those preferring versus not preferring a labeled product). The unweighted revenues for rBST treated and untreated herd milk is also given for each premium level.

With no price-premium assessed to the labeled product, 78% of the milk purchasers indicated they would prefer milk products from untreated herds. About 12 percent of milk purchasers indicated that they would still prefer milk from untreated cows if the labeling premium were as high as $.80 per gallon. Total producer revenue is maximized at a premium of $.10 per gallon.

Table 4 presents similar findings for consumers with no preference along with estimates of total market revenues. Producers treating their herds with rBST would maximize their revenues if a premium of $.60 per gallon was assessed. Total market revenue would be maximized at the $.10 per gallon level.

Table 5 presents a sensitivity analysis using Heien and Wessells price elasticity of demand estimate of -.63. Although the unweighted revenues of the untreated and treated cows' milk are maximized at $.80 and $.60, respectively, weighted total market revenues are maximized at a premium level of $.20 per gallon.

Thus far, we have assumed that there will be no change in the market price for rBST treated milk. Manufacturer's of rBST claim that use of the synthetic hormone could increase production by 10-25 percent without an offsetting increase in production costs, implying an increase in supply. This supply shift could have the effect of decreasing the market price of treated herd milk. However, a federal price floor prevents wholesale milk prices from falling below $10.10 per hundredweight. An increase in the milk supply due to rBST use could result in diverting more milk to federal support programs. If many consumers prefer milk from untreated herds and can choose which they buy, the resulting shift in demand would also drive prices down were it not for the federal support program. Thus, the assumption of no change in treated herd market price may be reasonable.

To summarize, the effect of a labeling premium on producer revenues depends on the assumption one makes regarding price responsiveness. Using the price elasticity derived from the demand model, -.97, producer (total market) total producer revenues are maximized at a 10 cent per gallon premium (Table 4). This indicates that product differentiation of rBST milk would slightly increase producer returns, depending on whether the cost of labeling can be held to less than 10 cents per gallon. Thus, even under

Table 2
Ordinary Least Squares Regression Results.

Variable	Coefficient	Std. Error	T-Ratio
Constant	6.863	1.281	5.309
ln Price	-.973	.141	-6.884
Y > Md.	.044	.054	.803
# Kids	.309	.095	3.248
ln Age	-.221	.110	-2.020
Single	-.448	.073	-6.176
Lambda	-.916	1.679	-.546

Adjusted R - Squared	.452
F(6, 661)	92.777

Table 3. Untreated Cows' Milk Price, Demand and Associated Total Revenue (Price Elasticity of Demand = -0.97)

	No rBST			
Premium	% Prefering	Price	Quant. Demand	Total Revenue
$0.00	0.78	$2.28	2.47	$5.63
$0.10	0.68	$2.38	2.37	$5.63*
$0.20	0.60	$2.48	2.24	$5.55
$0.30	0.36	$2.58	2.10	$5.43
$0.40	0.33	$2.68	2.05	$5.50
$0.50	0.27	$2.78	1.91	$5.31
$0.60	0.15	$2.88	1.81	$5.21
$0.70	0.13	$2.98	1.77	$5.26
$0.80	0.12	$3.08	1.70	$5.25

Table 4. Treated Cows' Milk Price, Demand and Associated Total Revenue (Price Elasticity of Demand = -0.97)

	rBST Treated			
Premium	% Preferring	Quant. Demand	Total Revenue	Market Tot.Rev.
$0.00	0.22	1.75	$4.00	$5.27
$0.10	0.32	2.04	$4.66	$5.32*
$0.20	0.40	2.16	$4.93	$5.30
$0.30	0.64	2.28	$5.20	$5.28
$0.40	0.67	2.26	$5.15	$5.26
$0.50	0.73	2.29	$5.22	$5.25
$0.60	0.85	2.31	$5.27*	$5.26
$0.70	0.87	2.30	$5.25	$5.25
$0.80	0.88	2.29	$5.23	$5.23

Table 5. Fluid Milk Total Revenue by Whether Cows Were Treated With rBST: (Price Elasticity of Demand = -0.63)

Premium	Untreated Total Revenue	Treated Total Revenue	Market Total Revenue
$0.00	$5.63	$4.00	$5.27
$0.10	$5.72	$4.66	$5.38
$0.20	$5.73	$4.93	$5.41*
$0.30	$5.71	$5.20	$5.38
$0.40	$5.90	$5.15	$5.39
$0.50	$5.82	$5.22	$5.38
$0.60	$5.84	$5.27*	$5.35
$0.70	$6.05	$5.25	$5.35
$0.80	$6.21*	$5.23	$5.34

Appendix
Sample Selection Probit Results.

Variable	Coefficient	Std. Error	T-Ratio
Constant	.859	.385	2.223
# Kids	.127	.050	2.530
Age	.998(E-03)	.322(E-02)	.310
Years of Education	-.021	.023	-.899

X^2	8.063
Significance level	.045

these most stringent of assumptions, product differentiation might prevent a decline in demand since most Wisconsin consumers prefer untreated milk.

Conclusions

A model is developed to estimate the returns to Wisconsin producers from differentiating the milk from rBST treated cows from untreated cows. The results indicate that product differentiation through labeling would not harm revenues from fluid milk sales, and could actually increase revenues. Premiums from 10 to 20 cents per gallon for untreated fluid milk are supported by this research. This translates to $1.16 to $2.33 per hundredweight of milk, a substantial improvement in farm milk prices which would support product differentiation.

The actual impact of mandatory product labeling clearly depends on the actual price responsiveness exhibited by consumers when faced with the two alternatives. An inelastic price responsiveness combined with a preference for untreated herd milk, would have the greatest impact on producer revenues and consumer's pocketbooks. Unitary price responsiveness would have much less impact on both producer revenues and consumer prices.

Implementation of labeling regulations, however, is less than trivial. Currently, rBST is neither legal nor does a cheap or easy method of verification exist. In the event that the FDA does approve its use, development of a method of verification is desirable. The size of the premium for untreated milk would indicate a significant return to developing a detection method. Barring development of a cheap detection method for rBST use, licensing or registration of rBST use may be the only effective means of verifying labeling.

Since respondents indicated concerns about other dairy products produced with milk from rBST treated cows, similar conclusions may be drawn about labeling other dairy products. However, Wisconsin is a net exporter of milk and milk products to other regions of the U.S. This research clearly indicates that the majority of consumers prefer milk from untreated cows. What is not known is whether product differentiation outside Wisconsin might also generate positive returns to Wisconsin producers. Data is needed on the preferences of consumers outside Wisconsin to address this issue.

However, for the local fluid milk market, this analysis indicates that providing consumers with choice in the market place will also generate positive returns to the Wisconsin dairy industry.

References

Douthitt, R. (1991). A consumer's perspective on proposed commercial use of the recombinant bovine growth hormone. *Issues*. LaFollette Institute for Public Policy, University of Wisconsin, Madison.

Heckman. J. (1979). Sample selection bias as a specification error. *Econometrica*, (January), 199-211.

Heien, D.M. & C.R. Wessells. "The Demand for Dairy Products: Structure, Prediction, and Decomposition." *American Journal of Agricultural Economics* 70 (1988): 219-228.

McGuirk A. & W. Preston (1990). Biotechnology and the consumer: The case of bovine somatotropin. Department of Agricultural Economics, Virginia Polytechnic Institute and State University. (February) Staff Paper 90-6.

Richards, Bill (1989). Sour reception greets milk hormone. *The Wall Street Journal*, (September 15), B1.

Tessmann, N.J., J. Kleinmans, T.R. Dhiman, H.D. Radloff & L.D. Satter. "Effect of Dietary Forage: Grain Ratio on Response of Lactating Cows to Recombinant Bovine Somatotropin." *Journal of Dairy Science* 71 (Suppl. 1), (1988):121.

Zepeda, L. "A Survey of California Dairy Farmers: Potential Adoption of Bovine Somatotropin" *University of California Agricultural Issues Paper* 88-1 (1988).

Table 1
Descriptive Statistics (n= 668).

Variable	Mean	Std. Dev.
Milk:		
Gal./week	2.39	2.03
Price/Gal	$2.28	46.11
Income over state median	.49	.50
Number kids	.83	1.13
Age	45.77	15.97
Single person	.16	.36

Consumer Perspectives on Food Safety Issues: The Case of Pesticide Residues in Fresh Produce[1]

Eileen O. van Ravenswaay, Michigan State University[2]
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This paper reviews three approaches to estimating consumer willingness to pay for reductions in food-borne risks. Contingent valuation methods compare favorably to market-based methods. Significant price premia for food safety improvements are found, regardless of the amount of food risk perceived by consumers. This finding suggests that uncertainty rather than risk perceptions may drive willingness to pay. Policy implications of this finding are developed.

Consumer choices about pesticide residues have been examined by several researchers using Lancaster's (1971) theory of the characteristics of goods (Hammitt, 1986; van Ravenswaay, 1988; van Ravenswaay and Hoehn, 1991 b and c). The basic premise of the theory is that a consumer derives value from the characteristics of goods. A consumer is assumed to choose a combination of goods whose characteristics maximize utility subject to income and price constraints. An individual's purchases of a particular type of good are a function of prices, income, and perceived characteristics. Shifts in the demand induced by changes in a good's characteristics reveal consumer willingness to pay for those characteristics.

Observing consumers' choices of pesticide residue and pest damage characteristics is difficult because consumers are offered few choices in actual markets. Special market circumstances created by the Alar scare in 1989 have been used to estimate consumer willingness to pay for reduced pesticide residues (van Ravenswaay and Hoehn, 1991c). A study has been conducted in organic markets (Hammitt, 1986). Contingent valuation approaches are beginning to be used to simulate choices that consumers would make in an actual market setting (Hammitt, 1986; van Ravenswaay and Hoehn, 1991a and 1991b).

This paper reviews the results of these studies to draw conclusions about food safety policy and implications for future research. The review is organized around the three different approaches to examining food safety tradeoffs.

The Impact of Alar on Fresh Apple Demand

Van Ravenswaay and Hoehn (1991c) studied the impact of the Alar scare on fresh apple demand to examine willingness to pay for food safety improvements. The study used existing market data for the New York City/Newark metropolitan area to estimate what consumers would have been willing to pay for Alar-free apples and to reduce risks from pesticide residues.

A statistical model for estimating market demand for fresh apples incorporating prices, incomes, and seasonality was developed. The effect of the Alar incident was incorporated using a measure of media coverage of Alar over time. Willingness to pay for the removal of Alar was calculated estimating the difference in expected apple demand with and without the scare. The study found that consumers would have been willing to pay over 30% (or 21 cents) more for Alar-free fresh apples in 1989. On an annual basis, this finding implies that the average person would have been willing to pay about $2.35 (in 1983 dollars) more that year to avoid the risks from Alar. Cancer risks reported in New York newspapers in 1989 indicated that annual risks were as high as .58 additional cancers per million persons. Dividing annual consumer willingness to avoid Alar by the reported annual cancer risk gives a willingness to pay of $4 (in 1983 dollars) to avoid an annual cancer risk of 1 in a million--assuming that consumers believed the reported risks.

This finding is similar to the findings of studies of peoples' responses to occupational risks, seat belt use, and smoke detectors. A critical review of those studies (Fisher et al., 1989) estimates that people are willing to pay between $1.6 and $8.5 in 1986 dollars (i.e., $1.44 to $7.65 in 1983 dollars) for a one in a million reduction in annual mortality risks. This similarity in willingness to pay estimates suggests that consumers reacted to Alar much as they do to other risks.

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The study of the impact of Alar gives an indication of what consumers are be willing to pay for reduced pesticide residues. However, it is unknown what people actually thought risks were. Consequently, strong assumptions were required to estimate willingness to pay for reduced risks.

Organic Food Consumers

Hammitt (1986) used both hedonic and contingent valuation methods to estimate consumer willingness to pay for reduced pesticide residues from organic food. His hypothesis was that the organic version of a product will be chosen if the premium paid per marginal benefits received (i.e., risk avoided plus or minus other attributes) is less than or equal to willingness to pay to avoid risk. Assuming that conventional and organic produce differ only in terms of risk--a strong assumption since they may differ in location sold, quality, and size--a consumers' choice between organic and conventional versions of a product was hypothesized to reveal bounds on marginal willingness to pay to avoid risk.

The hedonic study used market data to estimate incremental willingness to pay for organic over conventional produce. The incremental willingness to pay was computed from price premia estimated from weekly organic and conventional produce prices at five stores in the Los Angeles and Santa Monica area in 1985.

The price premia were estimated via linear regression assuming perfectly elastic supply. However, contrary to Hammitt's interpretation, this assumption implies that the price premia represent incremental *costs* of supplying, not incremental willingness to pay for, organic food. The resulting estimates of the incremental cost of organic produce (in 1985 dollars) were $80 per year or $1400 per lifetime, assuming a 5% discount rate and 50 years of purchasing.

Assuming that consumers perceive risks as scientists do, Hammitt used government data on residues and toxicity to estimate lifetime cancer risks avoided to be 14 in 1 million. Dividing lifetime incremental organic costs by this estimated risk reduction yields an estimate of willingness to pay of $100 for a 1 in a million reduction in lifetime cancer death risks.

Annualizing the data Hammitt used to derive lifetime estimates yields a willingness to pay of $400 (in 1985 dollars) for a 1 in a million reduction in *annual* mortality risks. This estimate is much higher than the annual estimates of $1.6 to $8.4 (in 1986 dollars) contained in the review of value of life studies by Fisher et al. (1989).

One reason why the hedonic estimates are so high is that the estimated organic price premia actually represent incremental costs of supplying organic produce rather than incremental willingness to pay. If willingness to pay for organic produce is similar to what would be expected on the basis of the studies reviewed by Fisher et al. and the findings of the Alar study (van Ravenswaay and Hoehn, 1991c), then Hammitt's study suggests that the costs of supplying organic produce exceed average willingness to pay for organic produce by a factor of 10.

A second possible reason why the estimates of willingness to pay for risk reduction are comparatively high is that consumers may perceive the risks of pesticide residues avoided to be greater than the estimates based on scientific residue and toxicity data. Higher risk perceptions would lead to a lower per unit willingness to pay for risk reduction.

Since hedonic methods have drawbacks, Hammitt conducted a pilot contingent valuation study using focus groups with organic and conventional food consumers. A brief questionnaire was administered to assess willingness to pay for organic produce and risk perceptions, yielding 45 usable responses.

The questionnaires revealed differences between the two groups in terms of risk perceptions. The median estimate of the conventional food consumers was that the risk of eventually dying from consuming conventional fresh produce was 8×10^{-7}. The median for organic consumers was 8.5×10^{-4}, or three orders of magnitude greater, and they identified a number of different adverse health effects of concern including cancer, sterility, allergies, asthma, and premature senility. Both groups estimated the risks from consuming organic food to be negligible.

Reported willingness to pay for organic food differed between the two groups. The median response of conventional food consumers was that they would be willing to increase their

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expenditures on fresh produce by 5% to purchase the safer produce (almost always the organic version). The median response for organic consumers was 50%, which is similar to median organic price premium of 45% estimated using market data.

Implicit values of life were calculated using annual incremental willingness to pay for organic food divided by annual perceived risk avoided. Because organic food consumers' perceived greater risks from consuming conventional food, their implied value of life was lower than it was for conventional food buyers. The median estimate for organic consumers was $.75 per 1 in a million annual risk reduction. The median estimate for conventional consumers was $6.62 (in 1985 dollars). These focus group estimates are much closer than the hedonic estimates to the range expected from the studies reviewed by Fisher et al. (1989) and the Alar study.

Contingent Valuation Survey

Van Ravenswaay and Hoehn (1991a and 1991b) designed a mail survey of consumer perceptions and valuations of pest damage and pesticide residues on fresh apples. Photographs portrayed four red delicious apples, identical except that the percentage of surface area with pest damage was 0%, 2.5%, 6%, and 24%. Three red delicious apples were presented as being labeled as being certified and tested to have "No Pesticide Residues," "No Detectable Pesticide Residues," and "No Pesticide Residues Above Federal Limits." One apple was presented without a label.

Respondents were asked their perceptions of the chance that a member of their household would experience health problems someday because of pesticide residues in foods. Respondents were then asked to assess the percent reduction in risks if all foods were labeled. To compare fresh apples to all foods, respondents were asked about their perceptions of food safety issues and the chance of pesticide residues being in different types of foods.

Respondents were asked how many apples they would buy at different prices during a typical shopping occasion in the fall if the quality of apples were like each of the photos and if all apples were labeled. Prices ranged from $.39 to $1.49 per pound. Respondents were instructed to assume that all apples had the same price, quality, and label, that only apples would be labeled, and that all other fresh fruits were available at normal prices. To extrapolate from the purchase questions, respondents were asked about their normal apple purchases throughout the year and the demographic characteristics of their household.

The surveys were mailed in September of 1990 to a nationwide random sample of 2,200 households with 1,888 of the surveys actually delivered. Completed questionnaires were returned by 48% of the households (906/1,888). The normal range of household sizes, incomes, education levels, and ages were represented.

Respondents reported that they believed pesticide residues are much more likely to be present on fresh fruits and vegetables than other foods. However, only fifty to sixty percent of all fresh fruits and vegetables and fifty to sixty percent of all apples were perceived to have any residues. This figure is very similar to the percentage of fresh fruits and vegetables on which the Food and Drug Administration (1987) detects residues.

Respondents' perceptions of the chance their household may experience health problems someday due to the current level of pesticide residues in food varied considerably. About a quarter of respondents (23.6%) perceived risks from pesticide residues to be one in a million or less. About 45% reported moderate risks (between 1 in 100,000 and 1 in 1,000). About a quarter (25.8%) perceived very serious risks (1 in 100 and above). These results indicate that over half of food consumers perceive risks from pesticide residues to be less than the worst case estimates of the Environmental Protection Agency (1987).

Perceptions of risk included concerns about a wide range of health effects. Cancer and allergies were perceived to be the greatest risk, but most respondents also perceived moderate risks of heart disease, nervous system disorders, and impaired immune system. Lower risks were perceived for impaired child development, birth defects, and mental illness.

The label for "no pesticide residues" was perceived to reduce risks by about a half to two thirds, the label for "no detectable pesticide residues" was perceived to reduce risks by about a half, and the label for "no pesticide residues above federal limits" was perceived to reduce risks by about a third to a half. Note that few respondents felt that risks would be completely reduced by any of the labels.

Willingness to pay for a label was estimated as the price consumers will pay for the no-label apple minus the price they will pay for the labeled apple at a given level of consumption. The prices consumers will pay for the different apples at given levels of consumption were estimated econometrically using the data from purchase questions (van Ravenswaay and Hoehn, 1991b).

The estimate of the average added price per pound for apples certified and tested to have "no residues above federal limits" was 23.6 cents. Apples certified and tested to have "no detectable pesticide residues" also have an estimated average added price of 23.6 cents per pound. The estimate of the added price per pound for apples certified and tested to have "no pesticide residues" was 37.5 cents per pound.

The measurement of risk perception explained little of the willingness to pay for the labels. There was less than a penny difference in the estimates of willingness to pay for the labels for people seeing no risks and people who perceived large risks. The perceived change in risk must be 1 in 100 or greater to add a penny to the estimate of willingness to pay for the labels.

The estimates of acceptable pest damage for each label, given no difference in price, were measured by the amount of pest damage that offsets the added willingness to pay for a labeled apple. The estimates for the "federal limit" and "no detectable residue" labels were both 7.5% of the apple photo surface. The estimate for the "no pesticide residue" label was 11.9%.

The estimates require careful interpretation. Pest damage was measured as the amount of surface area on an apple in a photograph. The photograph, of course, is only two dimensional, whereas a real apple is a sphere. Thus, in reality, surface area would be measured over the entire apple surface. This means that the estimates of surface area in this study are at least twice as large as what would be acceptable on a real apple.

The estimates of this study are comparable to those found in the Alar study. In the Alar case, it was estimated that people would have been willing to pay 31.3% more for the Alar-free apples--approximately 28.7 cents more per pound in 1990 dollars. This is well within the estimated obtained in the contingent valuation survey. The estimates of price elasticity for fresh apples were also very similar in the two studies. In contingent valuation survey, the price elasticity was estimated to be -1.86. In the Alar study, elasticities ranged from -1.95 to -2.09.

Because most consumers do not purchase organic apples, the estimates of willingness to pay for the no pesticide apple should be less than the price premium actually paid for organic apples in the market. Using data collected in 1985, Hammitt (1986) estimated a market premium for organic apples of 37 cents over an average price for regular apples of 79 cents per pound. In 1990 dollars, that premium would be about 50 cents. As expected, the estimate of willingness to pay for the no pesticide apple from the contingent valuation survey is less than this premium.

The authors also show that their results are consistent with studies of willingness to pay for risk reduction. Their estimates ranged from $.59 to $2.20 in 1990 dollars for a one in a million reduction in annual health risk. The Fisher et al. (1989) annual estimates in 1990 dollars are $1.95 to $10.37. The Hammitt estimate based on the focus group data translated into 1990 dollars is $8.83 for conventional food consumers and $1 for organic consumers. The survey estimates of willingness to pay for risk reductions should be lower since they reflect perceptions of any type of health risk while the estimates from other studies are based on mortality risks.

Conclusions

Contingent valuation methods compare favorably to market based methods. They eliminate the need to make unrealistic assumptions about risk perceptions. They also offer flexibility in examining tradeoffs between pesticide residues and other important food characteristics such as quality.

Future research should aim at refining contingent valuation methods and comparing their results to estimates based on market data. Ways of incorporating the effect of price and quality changes in substitutes and complements need to be developed. Alternative methods for measuring risk perceptions also need to be developed.

The empirical results indicate that consumers are willing to pay significant price premia for food safety improvement. The finding that consumers are willing to pay for foods certified and tested to meet federal limits suggests that consumers believe federal standards give them significant risk reductions, but they are uncertain that federal standards are being met. The implication is that consumers would obtain significant value from learning that virtually all foods do meet federal standards.

While consumers may see value in learning that residue standards are being met, information about the percentage of foods with detectable levels of residues would be unlikely to improve the confidence of consumers. The average consumer perceives the percentage of foods with any residues to be similar to what is actually detected by the FDA's monitoring program.

Consumers are willing to pay even higher price premia for apples certified and tested to have no pesticide residues, but not for apples with "no detectable" residues. This finding suggests that consumers believe that federal standards do not eliminate all the risks from pesticide residues.

However, the additional willingness to pay for a "no pesticide residue" apple may not be high enough to cover the costs--both in terms of higher food prices and pest damage--of eliminating all pesticides. This is an important point because consumers appear unwilling to accept more than a minor amount of pest damage. Even if apples were certified and tested to have no pesticide residues and were no higher in price, the amount of pest damage that would be accepted would be very small.

People's perceptions of the likelihood of someone in their household becoming ill from pesticide residues vary tremendously. About half of consumers view the chance of illness as fairly low, but a quarter see very high risks. Moreover, many types of illnesses are associated with pesticide residues in food--not just cancer. This finding has important policy implications because federal policy and risk communication has tended to focus exclusively on cancer.

Despite the variation across people, perceptions of the likelihood of illness from pesticide residues explain little of the estimated willingness to pay for the different residue levels presented in this study. It is possible that it is people's uncertainty about what the risks could be that may better explain why people were willing to pay significant premia for guarantees that residues meet federal standards. If so, risk communication aimed at reducing people's perception of the average risks from pesticides may have little impact on consumer concerns. What may be needed instead is information about the safeguards in place that reduce the chance of mistakes--mistakes which result in contamination problems or the need to revise tolerances for pesticide residues in food. This type of information would increase trust and reduce uncertainty about risks.

References

Environmental Protection Agency. (1987) Unfinished business: a comparative assessment of environmental problems. Washington, D.C.: U.S. Environmental Protection Agency.

Fisher, A., L.G. Chestnut, & D.M. Violette. (1989) The value of reducing risks of death: a note on new evidence. Journal of Policy Analysis and Management. 8(1), 88-100.

Food and Drug Administration. (1987) Residues in foods - 1987. Washington, D.C.: U.S. Food and Drug Administration.

Hammitt, James. (1986) Organic carrots: consumer willingness to pay to reduce food borne risks. Santa Monica, CA: The RAND Corp. R-3447-EPA.

van Ravenswaay, E. O. (1988) How much food safety do consumers want? an analysis of current studies and strategies for future research. Consumer demands in the marketplace: public policies related to food safety, quality and human health. Katherine L. Clancy, Ed. Washington, D.C.: Resources for the Future.

van Ravenswaay, E. O. & J. P. Hoehn. (1991a) Consumer willingness to pay for reducing pesticide residues in food: results of a nationwide survey. East Lansing, MI: Michigan State University, Department of Agricultural Economics Staff Paper No. 91-18.

van Ravenswaay, E. O. & J. P. Hoehn. (1991b) Contingent valuation and food safety: the case of pesticide residues in food." East Lansing, MI: Michigan State University, Department of Agricultural Economics Staff Paper No. 91-13.

van Ravenswaay, E. O. & J. P. Hoehn. (1991c, forthcoming) The impact of health risk on food demand: a case study of alar and apples. Economics of food safety. Julie A. Caswell, Ed. New York: Elsevier Science Publishing Company, Inc.

The Consumer Interest and the Regulation of the Title Insurance Industry

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Title insurance is a source of major consumer problems, thriving in a market that is uncompetitive and largely unregulated, with low benefits compared to cost. Market failure exists because of limited information and a structure that provides little incentive for brokers and lenders to encourage competition. Previous regulatory efforts such as RESPA have failed to significantly improve the situation. This paper proposes changes both in the structure of incentives and in information disclosure requirements.

Title insurance is a major closing cost in the purchase of a home, yet it receives little critical attention. Every year consumers hand out millions of dollars, without question, for insurance that most know nothing about. In 1989, about 175,000 homes were sold in Ohio, with a median value of about $70,000.[1] As part of these sales, consumers paid more than $63,000,000 for title insurance premiums.[2]

The cost of title insurance is not in itself a problem, as the issue is whether the benefits justify the cost (Johnstone, 1988) and whether a lower cost alternative is possible. An examination of the loss ratio information for title insurance reveals that it is very expensive when benefits are considered. In 1987, only 6 percent of the premium dollar was paid in losses, while for property and casualty insurance in general, 76 percent of the premium dollar was paid in losses.[3]

The loss ratios in Ohio are typical for industry wide loss ratios, as national estimates range from 3 to 10 percent (Dukminier and Krier, 1988).

The title insurance industry defends the low loss ratios by saying that the premium covers the expenses incurred before the policy is written - the title search, document preparation, and maintenance of records (Plotkin, 1978, p. 29). This defense is not appropriate in Ohio, however, as the industry has stated that the premiums in Ohio are for risk only. Thus, the loss ratio in Ohio is a true loss ratio (Competitive Practices, 1988, p.74).

To examine the complex problem of title insurance, this paper employs a combination of legal research and field research to analyze the system in which title insurance operates and the impact of that system on consumer choice. The author analyzed statutory and case law to determine the legal context, and went through the files of the Ohio Insurance Commission, which included letters, reports, and financial statements, to gather information on title insurance costs and practices. The paper presents proposals for legislative reform that would prohibit price fixing in title insurance, require disclosure of information to consumers, and improve the market for title insurance. While the paper focuses on Ohio, the problems presented are typical for most states in the U.S.

Background Information

Title refers to a property owner's bundle of rights, including possession, use, control, enjoyment, and the power to transfer the property (Cribett, 1975; Werner, 1988). Encumbrances on the title jeopardize these rights and could result in a loss of a right or a monetary loss. Encumbrances include liens on the property, transfers through divorce, easements, wills, defective probate procedures, and

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other court proceedings (Greene, 1973).

Title insurance is a means of protecting the lender and the property owner from financial loss if a defect in the title is found. Title insurance is an alternative to the more traditional method of an abstract of title and a title opinion, in which an attorney searches the public records and offers an opinion on the title, indicating what, if any, problems are found. Partly due to the requirements of the secondary market (Uri, 1989), lenders now routinely require title insurance (Werner, 1988). In most home purchases, two policies are required - one to cover the lender for the mortgaged amount and one to protect the owner up to the amount actually spent in reliance of a valid title (Pedowitz, 1983).

Title insurance is retrospective in that it only insures against problems existing before the insurance is issued, and is paid for with a one time fee (Johnstone, 1983). The title insurance premium is actually two distinct premiums in one. The first is for services provided by the title insurance company, including the maintenance and search of records to find encumbrances. The second is the "risk" premium - covering the insurance portion of the transaction.

The idea of a "risk" premium is somewhat of a misnomer, however, as the cost of title insurance is not related to the amount of risk (Greene, 1973) but is based entirely on the price of the home. Factors relevant to risk, such as the length of time since the last title search, the location of the home, and the quality of the local records, are not considered. In fact, a "national rate", recommended by the National Insurance Underwriter's Association, is generally used. These rates have not changed since their adoption in 1957 (Uri, 1989).

In Ohio, as well as most of the U.S., in addition to using the national rate, a national standard policy is also used. The policy is recommended by the trade association of the industry - the American Land Title Association.[4]The standard policy does not insure against losses due to any problem that a search finds existed prior to the issuance of the insurance, nor does it cover any defect that is discovered later but does not appear in the public records. Thus, there is very little that the policy covers beyond what a careful search of the records would disclose (Johnstone, 1983, p.509).

Title insurance is regulated by each state through its insurance department. Insurance is not considered commerce but a contract between two parties and thus is not governed by the federal government under the Commerce Clause of the Constitution (Paul v. Virginia, 1868). A 1972 HUD study concluded that title insurance received little attention from state insurance commissions, and found uniform filing rates common (U.S. Department of Housing and Urban Development, 1972).

State Regulation

In Ohio, title insurance is regulated by the Department of Insurance. The statutory basis for the regulation is ORC Chapter 3953 - Title Insurance, passed in 1967. The statute requires all rates, forms, and policies to be filed with the Department before they may be issued. There is no requirement that the Department approve the rates, but unless the rate is disapproved within 30 days, the filing is be deemed to be approved.

All companies in Ohio use the national rate.[5] The rate for owners insurance is based on the value of the home, starting at $5 per thousand of value up to $100,000 while lenders insurance is a flat $25 when purchased with owners insurance.[6]

There appears to be neither competition nor regulation of title insurance in Ohio. The title insurance companies file rates, but in essence operate independent of any oversight, setting prices that are approved without a chance for comment. This is contrary to the concept of optimal pricing of products, which is generally achieved either through market competition or government regulatory procedures.

Chapter 3953 has no provision for disclosure of information to consumers, no provision for consumer redress, and no general consumer protection, except for the requirement of a reserve fund to assure financial solvency of the company.

Federal Actions

A major reason for the lack of competition in title insurance is the protection it receives from the scrutiny of the anti-trust laws by two major doctrines - the "business of insurance" doctrine and the "state action" doctrine. Both allow prices to be set by state authority instead of by the market.

The "Business of Insurance"

The McCarran-Ferguson Act (1945) exempts the "business of insurance" from the anti-trust laws, and allows a federal role in insurance only if there is no state regulation. Thus, the Clayton and Sherman Acts were deemed inapplicable to insurance of any type as long as the state has some form of regulation.

In the early 1970s, however, several cases raised the question of whether title insurance was entirely within the definition of "business of insurance". The title insurance industry asserted that the search and the insurance portions of the premium could not be separated[6] and since part of the fee is for insurance, the entire premium should receive a "business of insurance" exemption from competition. However, in Goldfarb v. Virginia State Bar (1975) the Supreme Court held that attorneys could not engage in price fixing by setting fixed fee schedules for conducting title examinations and title searches. The logic was extended from attorneys to title insurance companies - why should title insurance companies be exempt from anti-trust scrutiny when conducting title searches while attorneys conducting title searches were liable for antitrust violations.

The separation of the insurance and search portions of the fee for anti-trust scrutiny seemed strengthened with the Group Life and Health Insurance Co. v. Royal Drug Co. (1979). The Court determined that only the "business of insurance", not the business of insurers, would be exempt from competition, and the purpose of the insurance exemption was to allow for cooperation in rate making for the actuarial purpose of spreading risk. Under the thinking of Royal Drug, since title insurance searches and abstracts do not encompass the spreading of risk, the search activities should not be exempt from anti-trust laws by McCarran-Ferguson. There is a further question of whether even the insurance portion should be protected, since title insurance rates are not based on actuarial information.

The State Action Doctrine

Parker v. Brown (1943) established the State Action Doctrine under which businesses regulated by the state are exempt from anti-trust requirements. Although the State Action Doctrine has been limited, it still is possible for title insurance companies to take refuge under it.

RESPA

In 1974 Congress passed the Real Estate Settlement Procedures Act (RESPA) to help standardize settlement procedures, to provide for better and more timely consumer information, to prohibit kickbacks and unearned fees, and to assure the right to comparison shop for settlement procedures (RESPA, 1989).

The high costs and lack of knowledge about title insurance contributed to the passage of RESPA. In a study conducted prior to the passage of the act, HUD found that title insurance received little attention from state insurance departments, citing uniform rates, and commissions being given to real estate agents and other professionals making referrals (U.S. Department of Housing and Urban Development, 1972).

RESPA provides that no seller of property shall require either directly or indirectly that the buyer use a particular title insurance company. The common practice of the real estate agent having the seller purchase from a particular company may be a violation of this act. In addition, any unearned fees by lenders or real estate brokers could be a violation of RESPA.

Truth In Lending

The Truth in Lending Act of 1968 (Consumer Credit Practices, 1989) focused on the information consumers need to more readily compare financing alternatives. A major component of TIL is the use of the Annual Percentage Rate - a consistent method to interest and costs. While theoretically, title insurance costs should be included in the computation of APR if they are required by a lender, the Truth in Lending Act exempts it from inclusion.[7]

The FTC Challenge

In 1987 the FTC filed a complaint against six title insurance companies charging them with fixing prices of title searches and settlement services in 13 states, including Ohio (FTC,1990). The complaint alleged that the companies were setting prices through a rating bureau. Based on the then recent developments in case law regarding McCarran-Ferguson exemptions and State Action requirements, the FTC claimed that the settlement services were not within the "business of insurance" and thus the costs could not fixed.

While the case was in progress, the Supreme Court handed down its decision in Southern Motor Carriers, which expanded the state action doctrine, making it difficult to challenge price fixing. Under Southern Motor Carriers, states needed to show only a clear policy supporting the state regulation of an industry and active supervision of the industry (Initial Decision, 1986, p. 90).

The FTC presented information that indicated that there was not active state supervision, but Ohio claimed that the rates filed with the Insurance Superintendent (which were admittedly fixed by a rating bureau) constituted only the Risk portion of the total premium, and that no portion of the filed fee was for title search or related costs. The FTC claimed that the Ohio fees included hidden costs for title search and examination, but the FTC was unable to prove its case against the companies as they operated in Ohio (Competitive Practices, 1989, p. 96).

The Administrative Judge ruled that the title insurance companies should "cease and desist from discussing, proposing, setting, or filing any rates for title search and examination services through a rating bureau " in Connecticut and Wisconsin (Competitive Practices, 1989,p.103). After an appeal by the title insurance companies, the final order, issued on September 19, 1989, allowed price setting for "title search and examination services in any state where the collective activity is engaged in pursuant to clearly articulated and affirmatively expressed state policy and where such collective activity is actively supervised by a state regulatory body" (Final Order, 1990).

The Ohio Response

For many years, rates and policies in Ohio were filed by a rating bureau. The Ohio Title Insurance Rating Bureau began operating in 1972 and filed policies and rates for all companies in Ohio[8] (Competitive Practices, 1989, p.63). Deviations from these rates were not permitted.[9]

A rating agency is still legal in Ohio if it serves a specific state policy goal. The major members withdrew, however, in the mid 1980s when the FTC began its investigation of price fixing and rating bureaus[10] (Federal Trade Commission, 1990). The rating bureau ceased operation in 1989, and now companies file their own rates and policies. The title insurance companies continue to charge the rates established by the bureau. An investigation of the files of the Superintendent of Insurance in March 1990 revealed that all of the 25 Title Insurance Companies registered in Ohio charged the identical rates and provided the same policy.[11]

Market Failure

The title insurance industry in Ohio is an example of market failure, and the housing consumer pays a high price for a product in which there is absolutely no chance to comparison shop. There is a complete divorce between the person making the decisions and the person paying the bill, and the burdens do not fall on the appropriate parties. The real estate agent chooses the title insurance company, the seller pays the fee, and the buyer must live with the decision. There is no incentive for the real estate agent to comparison shop for a more efficient supplier or to keep costs down.

Consumer economists agree that the consumer of the product has the most incentive to make optimal decisions (Sexton, 1981, Sensauer, Kinsey & Roe, 1984). When the ultimate consumer does not choose the product, competition will likely be based on non-price factors such as fringe benefits provided to the decision maker, increasing the cost with little or no benefit to the consumer.

Research has shown that the primary source of information for housing consumers is the real estate agent (Burke, Belch, Lutz & Bettman, 1979). If the real estate agent does not inform the seller, the seller will not likely know the cost or the company until the closing of the home (Eskridge, 1984).

When it is difficult for consumers to obtain price and quality information, more efficient suppliers cannot inform consumers of their lower prices or take a larger share of the market (Ippolito, 1986). Even after the fact, most purchasers of title insurance know so little about the product they have purchased that they have no idea of whether they have received an adequate value for their money.

Proposed Remedies

Consumer Information

Consumers must be informed and must be the parties making title insurance decisions if there is to be any incentive for companies to become competitive (Wilkie, 1974). Further, consumers must be informed in order to recognize a problem. If consumers are not aware of a problem, legislators will not be likely to make changes, especially in light of the title insurance lobby. Only if there is a high level of awareness and general recognition of a problem will changes be possible.

State Actions

State governments could require the State Department of Insurance to prepare consumer information related to title insurance and the home buying/selling process. This information should focus on both the buyer and the seller, and should be available through the Department of Insurance as well as through mandatory distribution by real estate agents.

The legislature could also require that loss ratios for title insurance be comparable to those required for other types of regulated insurance, and spell out the way in which title search costs are separated from the risk portion of the premium.

States could also develop computerized abstract systems so that expensive duplication of efforts by many title insurance companies would not be necessary. A small tax on each home sale could fund such a program at a fraction of the cost presently incurred by title insurance companies for record maintenance. Title insurance companies could use these files, and in concert with the other proposed regulations, the savings would be passed on to consumers.

Revision of RESPA

The Real Estate Settlement Procedures Act (RESPA) was aimed at informing consumers about settlement costs. RESPA should be amended to include sellers as well as buyers. RESPA assumed that the market was more competitive, as the RESPA booklet given to buyers says shop for the best coverage, the best price, and the level of risk that they are willing to absorb. Shopping for title insurance is not possible under the current system. HUD needs to support the efforts of the FTC in scrutinizing the price fixing aspects of the title insurance industry if the competitive market that HUD forsees is to be possible.

Revision of Truth in Lending

Title Insurance was exempted from the calculation of APR by the Truth-In Lending Act. Including the cost of both buyer's and lender's title insurance in the APR calculation the would give consumers better information on which to compare the true cost of a lender's mortgage package. Lenders would also have incentive to consider how much risk they are willing to take in order to lower interest rates and be more competitive. By making title insurance a competitive part of the lending package, the lender has an incentive to offer the consumer alternatives or to take on the risk (Eskridge, 1984).

Repeal of the McCarran Ferguson Act

There have been several efforts in Congress to eliminate the McCarran Ferguson Act so that insurance would be liable to anti-trust charges. Included were HR 2727 (1987) and the "Insurance Competition Improvement Act" (1980). In 1986, the National Association of Attorneys General adopted a resolution recommending repeal of the McCarran Ferguson Act (Mattox, 1989, p.15). The elimination of McCarran Ferguson would be particularly helpful in Ohio, where there is little oversight and where the label of "business of insurance" is questionable.

Conclusions

The structure of the title insurance industry exists in its present form because federal and state actions have failed to protect the consumer interest. Changing the structure of the industry to protect consumers requires several types of actions. Consumer education is necessary, but not sufficient to bring about substantial changes. Most consumers make few home purchases, and both sellers and buyers are often lacking in time at the point at which title insurance decisions are made.

Regulation would be an efficient method of controlling costs. Regulation could include application of the antitrust laws to the title insurance industry, mandatory information disclosure, and state regulation of loss ratios. Repeal of the McCarran Ferguson Act and revisions of RESPA and TIL are needed to encourage competition and improve the ability of consumers to make informed choices.

End Notes

(1) Information from Sue Davis, Ohio Board of Realtors, February 1990.

(2) Calculated by the author based on price information in the files of all of the Title Insurance Companies doing business in Ohio. Files are maintained in the Property and Casualty Division of the Ohio Department of Insurance, Columbus, Ohio.

(3) Ohio calculations made by the author based on information filed at the Department of Insurance, March 1990. Property/Casualty loss ratios are calculated from data in *Best's, 1988.*

(4) The policies of companies doing business in Ohio are on file in the Department of Insurance. The author went through the files and determined that all companies use the ALTO recommended owner and lender policies.

(5) Determined by author, based on investigation of files at the Department of Insurance. March 1990.

(6). Lower court cases supporting this argument include *Commander Leasing C. v. Transamerican Title Ins. Co.* 477 F 2d 77, *McIlhenny v. American Title Ins. Co.*, 374 F. Supp 564, and *Schwartz. v. Commonwealth Land Title Insurance Co.*, 374 F. Supp. 584.

(7). Public Law 90-321, the Consumer Credit Protection Act (Truth in Lending is the short title of Title I-Consumer Credit Cost Disclosure) stipulates in S106(a) that all costs required by a lender be included in APR calculations, but S106(e) exempts title insurance.

(8) Letter on file with Ohio Department of Insurance from Norman T. Smith, Executive Director of the Rating Bureau, dated March 1, 1989.

(9) Letters on file at the Ohio Insurance Commission indicate a few occasions of a company trying to charge less or to have, for example, a builders policy count towards an owner's policy. Other companies would report violations to the superintendent so that action could be taken to prevent any competition.

(10) Smith letter, March 1, 1989.

(11) Investigation by the author, Department of Insurance, Ohio.

References

Best's Aggregates and Averages, Property-Casualty, 49th ed. (1988). Oldwick, NJ : A.M. Best Company.

Burke, M., Belch, G. E., Lutz R. J. & Bettman J. R. (1979). Affirmative disclosure in home purchasing, *Journal of Consumer Affairs*, *13* (Winter).

Competitive Practices in the Title Insurance Industry, H.R.1766, Antitrust Damages Clarification Act of 1987. (1989). Hearing before the Subcommittee on Monopolies and Commercial Law of the Committee on the Judiciary, House of Representatives. One Hundredth Congress, 2nd Session. May 4, 1988, Serial No. 132. U.S. Government Printing Office.

Consumer Credit Protection Act, Public Law 90-321, Title I - Consumer Credit Cost Disclosure (Truth in Lending), 1968. 15 U.S.C. S1601-1606. (1989).

Cribett, J.B. (1975). Principles of the Law of Property. Mineola, NY: The Foundation Press.

Downs, A. (1987). An Encompassing View of the World of Real Estate Finance. Mortgage Banking (April).

Dukminier, J. and Krier, J. (1988). Property,2nd ed. Boston: Little, Brown and Company.

Eskridge, W.N.,Jr. (1984). One hundred years of ineptitude: the need for mortgage rules consonant with the economic and psychological dynamics of the home sale and loan transaction, Virginia Law Review, 70, 1083-1217.

Federal Trade Commission, 110 FTC 32. Docket 9190. (1990).

Final Order, Prohibited Trade Practices and Affirmative Corrective Actions, Sept. 19,1989, (Docket 9190). 55 FR 363 (1990).

Goldfarb v. Virginia State Bar, 421 U.S. 773 (1975).

Greene,M.R. (1973). Risk and Insurance, Cincinnati, OH: South-Western Publishing Company.

Initial Decision Issued by Administrative Judge Morton Needleman in the Matter of Ticor Title Insurance, et al., Dec. 22, 1986 (Docket 9190), p. 90. Washington DC: Federal Trade Commission.

Johnstone, Q. (1983). Land transfers: process and processors. Valparaiso Law Review, 22, 493-556.

McCarran-Ferguson Act, Insurance Regulation, 1945. 15 U.S.C. 1011 -1015 (1989).

Parker v. Brown. 317 U.S. 314 (1943).

Paul v. Virginia. 8 Wall 168 (1868).

Pedowitz, J.M., Ed. (1979). Title Insurance and You: What Every Lawyer Should Know, Chicago: American Bar Association.

Pedowitz, J.M. (1983). Title Insurance in Current Transactions, NY: Practising Law Institute.

Pedowitz, J.M. (1985). Title Insurance, The Lawyer's Expanding Role, Chicago: American Bar Association.

Plotkin, I.H. (1978). On the Theory and Practice of Rate Review and Profit Measurement in Title Insurance. Cambridge MA: Arthur D. Little, Inc.

Real Estate Settlement Procedures Act, Public Law 93-533, Dec. 1974. 12 U.S.C. 2601-2617 (1989).

Rooney, L. (1979). A primer for attorneys. In J. M. Pedowitz (Ed.), Title Insurance and You: What Every Lawyer Should Know, Chicago: American Bar Association.

Royal Drug (Group Life and Health Insurance Co. v. Royal Drug Co), 440 U.S. 205 (1979).

U.S. Department of Housing and Urban Development. (1972). Mortgage Settlement Costs, Washington DC: Author.

Uri, N. (1989). The title insurance industry: a reexamination. Real Estate Law Journal, 17, 313-334.

Werner, R.J. (1988) Real Estate Closings, Second Edition, New York: Practising Law Institute.

Wilkie, W.L. (1974). How consumers use product information: an assessment of research in relation to public policy needs. Washington, DC: National Science Foundation.

Liability Insurance and Family Day Care Providers: A Review of the Issues

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The liability insurance crisis of the mid-1980's threatened to cripple the day care industry. Concern continues that providers may still be unable to find affordable liability insurance. This paper includes discussions of family day care providers' perceptions of the availability of liability insurance, an informal review of the insurance products available to providers, and state regulatory attempts at market intervention. It also identifies the role of family and consumer economics professionals in improving the current situation.

Introduction

Today, over one-half (57 percent) of all women with preschool age children are in the labor force (U.S. Department of Labor, 1989). Increased employment of women has meant increased demand for quality, affordable child care. Family day care (FDC) homes are important in meeting child care needs, especially for infants and toddlers. In 1987, 16 percent of children under age five were in FDC (U.S. Bureau of the Census, 1990). One estimate is that 80 to 85 percent of all infant care is in FDC homes (Gellert, 1988). A 1989 estimate of 200,071 regulated FDC homes in the U.S. (The Children's Foundation, 1989) was projected to be a mere fraction of the total; 50 to 90 percent of all FDC homes are unregulated (Hofferth, 1989). Parents may select FDC rather than center care because of the home-like environment (Fuqua and Labensohn, 1986), the convenience (Steinberg and Green, 1979), and/or the lower cost (Cheskis-Gold, 1988).

The liability insurance crisis of the mid-1980s threatened to cripple the day care industry (Pave, 1985). Concern continues that the crisis has had a lasting negative impact on child care providers, and especially FDC providers. One outcome of the insurance crisis may be that FDC providers are operating without liability insurance. Also, unavailable and/or unaffordable liability insurance may have reduced the amount of day care available. Yet there is little clear evidence that liability insurance today IS unavailable and unaffordable. Therefore, the purpose of this paper is to review the issues related to the availability and affordability of liability insurance for family day care providers.

The first section of the paper reviews the impact of the mid-1980s liability insurance crisis on the day care industry. The second section examines the crisis' continuing impact on FDC providers today. Specific aspects discussed include providers' perceptions of the availability of liability insurance and an informal review of the products available in both the homeowners insurance and the commercial insurance markets. This section also reviews and evaluates the validity of the reluctance of the insurance industry to insure FDC liability. The third and final section of the paper reviews state regulatory attempts at market intervention and identifies ways that family and consumer economics educators can make positive contributions to the FDC liability insurance situation.

The Liability Insurance Crisis of the Mid-1980s

Two highly publicized events contributed to the liability insurance crisis of the mid-1980s. In the McMartin child abuse case, employees of a California day care center faced multiple charges of sexually abusing children in the center's care. The second event was the dissolution of Mission Insurance Company, a major insurer of child care providers. Other factors which contributed to the liability insurance crisis included drastic growth in the child care industry and a lack of actuarial data on liability risks in day care (U.S. Department of Labor, 1989).

During the insurance crisis, liability policies for child care were either cancelled or premiums were dramatically increased, often with virtually no warning (Pave, 1985). An estimated five to 20 percent of child care centers did not have liability coverage during the crisis and two percent of centers closed, at least in part due to insurance problems (U.S. Department of Labor, 1989).

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A Market Review of FDC Liability Insurance

Industry responses to the liability insurance crisis have been to place greater restrictions on the available coverage, to develop stricter underwriting guidelines, and/or to increase premiums. For example, few policies today extend coverage for day care to include claims related to child abuse. One company now has seven pages of underwriting criteria which are to be reviewed before writing a day care policy (Colorado Division of Insurance, 1989). Reports of premium increases during and immediately following the insurance crisis were widespread (Pave, 1985).

One explanation for much of the industry's response to the liability insurance crisis is the "long-tail liability problem." The long-tail problem means the insurer must decide how much premium to charge keeping in mind that some premium must be set aside in reserves for claims which may not be filed for many years. In most states, an individual injured as a child could file suit at any time up until age 20 since the statute of limitations (often two years) does not take effect for a child until he or she reaches the age of majority (U.S. Department of Labor, 1989).

Another result of the liability insurance crisis is that liability insurance for FDC providers is increasingly difficult to locate. Providers may turn to two markets. Virtually all homeowners insurance companies exclude liability coverage for FDC from the homeowners insurance policy, but some offer a rider to the policy which adds back the coverage. FDC providers may also purchase insurance from the commercial liability insurance market.

Data from the industry are generally unavailable to determine whether purchasing FDC liability insurance through homeowners insurance coverage is widespread. A Department of Labor Liability Insurance Task Force report (U.S. Department of Labor, 1989) indicated that the number of insurers writing child care liability insurance has decreased since the mid-1980s. However, the report did not distinguish between homeowners insurance and commercial liability insurance.

The report also noted that admitted carriers[2] do not comprise a large market share in the commercial child care liability insurance market. In fact, the report estimated that one nonadmitted carrier controls an even larger market share today than it did in 1985. If a market for liability insurance for FDC providers were growing, the market shares of nonadmitted carriers should decrease, not increase.

Domination of the market by nonadmitted carriers does present some problems for consumers. Nonadmitted or surplus lines carriers are sometimes not regulated as closely as admitted carriers and may not be regulated at all. In some states, they are not allowed to participate in the state's insurance guaranty fund, which would pay the claims of consumers if an insurance company became insolvent. Also, most consumers are unlikely to be familiar with nonadmitted companies.

Another lasting impact of the insurance crisis is that fewer states now require liability insurance as a prerequisite for child care licensing or registration.[3] Some states dropped the requirement when insurance became unavailable or unaffordable since an insurance requirement might drive FDC providers to the underground economy or out of the business entirely. Liability insurance is now a requirement for FDC homes in only 10 states; however, three states limit the requirement to transportation, one to homes with more than six children, and one to licensed providers (The Children's Foundation, 1989). States that require insurance generally do not specify a minimum amount of coverage (Morgan, 1987).

Liability Insurance for FDC Providers: What's Available Today

To determine the range of products available to a FDC provider seeking liability insurance, the researcher conducted an informal telephone survey of both the homeowners and commercial liability insurance markets. The researcher contacted a total of 20 property/casualty insurance companies as well as five companies[4] that write commercial liability insurance for FDC providers. The property/casualty insurance companies were selected from those ranked among the top ten property/casualty insurers nationwide and the top 15 property/casualty insurers in Illinois. The commercial

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[2] An admitted carrier is one licensed to sell insurance in a particular state.

[3] In the 26 states that license FDC homes, an agency sets standards and conducts inspections. In the 16 states which register FDC homes, an agency sets the standards and the caregiver conducts a self-study. Some states plan random rotating visits to a percentage of FDC homes (Morgan, 1987).

[4] The researcher contacted at least five other companies that write liability insurance for child care centers but not for FDC providers.

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Commercial liability insurance companies also restricted coverage through underwriting guidelines. However, among the five companies surveyed that wrote commercial FDC policies, none restricted the number of children in care. All five did, however, require the provider to meet any applicable licensing or registration requirements. Those requirements generally limit the number of children any one provider can accept. Four of the five policies extended liability coverage to defense costs related to sexual abuse claims; however, the liability limit for such coverage was lower in three of the four policies. For example, one policy with a $300,000 liability limit set the limit for claims related to sexual abuse at $25,000. Coverage was usually extended to accidents that occurred away from the FDC home.

Premiums for commercial liability insurance were much higher than for homeowners insurance endorsements. Premiums for the five policies reviewed ranged from $350 to $675 for a $300,000 liability limit. However, commercial policy premiums were generally not directly comparable to each other. For example, the $350 premium included no accident insurance while the $675 premium included $20,000 in accident insurance. Some policies had deductibles (usually $250). Other factors that sometimes affected the amount of the premium included the number of children in care, the size of the day care home, and the presence of pets or a swimming pool. In one policy, providers with a pool automatically added $75 to the annual premium.

Is the Insurance Industry's Cautious Approach Justified?

There is some evidence that the insurance industry has overestimated the liability risks associated with FDC, at least in states that regulate day care. All states have a minimum age requirement for FDC providers and 28 states have training requirements for providers. Most states (37) now require criminal record checks. All state regulations specify a maximum number of children in a FDC home and 38 states have some type of space requirements (The Children's Foundation, 1989). Most states (32) clearly prohibit corporal punishment (Morgan, 1987). Inspection of child care facilities for compliance with established standards is usually an essential part of state licensing programs (U.S. Department of Labor, 1989). However, in some states, inspection is infrequent, suggesting that even licensed FDC homes may not always be in compliance with the standards (Morgan, 1987). Also, as mentioned earlier a large proportion of FDC homes are unlicensed and unregulated. Sixteen states exempt some FDC homes from regulation - most often those caring for

liability insurance companies were identified based on information supplied by the Illinois Department of Insurance and the Surplus Lines Association of Illinois. When possible, the researcher also interviewed a local insurance agent for each of the selected companies.

Of the 20 property/casualty insurance companies contacted, five did not write an endorsement for FDC; three wrote the endorsement only if the provider already had homeowners insurance with the company. Two other companies extended liability coverage only to the most limited of day care operations. One would accept a client only if care was provided to at most two children; a second company excluded the business from the homeowners insurance coverage if the total annual day care income was less than $5,000.

The remaining ten property/casualty insurance companies offered an endorsement to cover FDC; however, all set restrictions on the number of children in care. Four were willing to write the coverage if the provider cared for three or fewer children; one would write coverage for up to four children. One company would insure FDC if no more than five children were in care. Four companies were willing to write insurance as long as the number of children did not exceed six.

None of the homeowners insurance policies extended coverage to sexual abuse claims. Most were at best vague about coverage for accidents that occurred away from the provider's home (on a field trip, for example). The premiums charged usually depended on the liability limits selected as well as the number of children. For example, for a $300,000 liability limit and $5,000 in medical payments coverage, premiums with a company that allowed only three children in care were less than $30 per year. Companies that wrote the insurance for up to six children generally had two premium schedules; one for providers who cared for three or fewer children and another for providers with four to six children. For example, one company charged $55 to providers with three or fewer children; providers who cared for more children paid $120 for the same policy (a $300,000 liability limit and $1,000 in medical payments coverage).

Underwriters were universally cautious about writing liability insurance for FDC providers. Although only one of the insurance companies required providers to be licensed or registered, most did indicate that an agent would visit the home and the company might refuse to write the coverage if unsafe conditions (usually defined as pets, pools, wood burning stoves, and playground equipment) were present.

Table 1
FDC Providers' Experiences With Liability Insurance

Variables	n	Percent of Total
Have Liability Insurance:	(112)	
Through homeowners insurance	26	23.2%
Through endorsement to homeowners	36	32.1
Through special policy outside homeowners	50	44.6
Reasons Why Don't Have Coverage	(94)	
Can't afford premiums	61	64.9%
Market problems	16	17.0
Not required for licensing	8	8.5
Procrastination	6	6.4
Don't need coverage	3	3.2
Problems When Tried to Buy Insurance	(53)	
Restrictions on policies or underwriting guidelines	25	47.2%
High premiums	24	45.3
Difficulty getting information	4	7.5

fewer than three or four children (The Children's Foundation, 1989).

Several surveys have reported that few child care facilities have filed liability claims, further evidence that the industry may have overestimated the liability risks. However, much of the evidence is reported only for child care centers; experiences in child care centers may or may not parallel those in FDC homes. A 1986 New Jersey survey (New Jersey, 1986) found that 97 percent of the child care centers surveyed reported no liability claims had been filed against them in the past five years. Among the claims that were filed, none were attributable to child abuse or neglect. In a Department of Labor survey of child care directors and professionals, 78 percent reported no liability claims or litigation despite having been in the business an average of almost 15 years. Most of the claims that were filed were for minor expenses (U.S. Department of Labor, 1989).

In 1989 the Department of Labor (U.S. Department of Labor, 1989) analyzed information about over 1,000 claims submitted to one carrier by 2,941 child care facilities; family day care represented as much as 10 percent of the group. The vast majority (94 percent) of the claims were $2,500 or less; the average size claim was less than $1,000. The six largest claims represented less than one percent of the claims but more than 30 percent of the actual dollars paid. Almost all (over 99 percent) of the facilities had never been sued or had a child abuse complaint filed against them.

The lone dissenting note is a study by the Colorado Division of Insurance (Colorado, 1989). That report suggested that insurance companies have **underestimated** the day care liability risks. Twenty-one insurance companies were asked to report statewide and nationwide data over the last five years. Based on those data, the report estimated that insurers incurred a $28.87 million nationwide underwriting loss in child care liability insurance; indeed, the companies suffered an underwriting loss in each of the five years.

However, the results of the Colorado report have been questioned. The report does not describe the types of facilities insured and consequently child care centers may have been grouped with such high-risk facilities as youth halfway houses (U.S. Department of Labor, 1989).

FDC Providers' Experiences With Liability Insurance

A survey of FDC providers was conducted in summer 1990. Surveys were mailed to approximately 1100 FDC providers who receive a monthly newsletter from the Cooperative Extension Service. About 18 percent or 196 providers completed and returned the survey. All of the providers who responded were licensed (required in Illinois for providers who care for three or more children).[5]

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[5] Illinois' licensing standards require only that a provider have auto liability insurance before transporting children; all auto owners in Illinois are required to have liability coverage.

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A total of 113 or 58 percent of the sample reported that they had liability insurance for their FDC business. However, when asked to describe the type of coverage they had, 26 providers indicated they were insured through their standard homeowners insurance policy (Table 1). The market survey suggests that these providers may well believe they have coverage when they do not. Therefore, it is possible that the total proportion of the sample with coverage may be as low as 44 percent. A survey of FDC providers by the Illinois Department of Insurance reported similar results (Illinois, 1989). Approximately 56 percent of the 244 respondents had insurance to cover liability. However, over one-half (54 percent) of those with insurance indicated that they insured their FDC business on their current homeowners insurance policy.

A total of 36 providers reported they had purchased an endorsement or rider to their homeowners insurance policy. Fifty providers had purchased additional insurance outside their homeowners policy (either a commercial liability policy or an umbrella liability policy).

FDC providers who did not have liability insurance were asked why they did not have the coverage. The eighty respondents who answered the question gave a total of 94 responses. Nearly 65 percent of the responses related to the providers' perceptions that they were unable to afford the premiums. Seventeen percent of the responses described market problems – providers who were denied coverage, had been unable to locate the coverage they need, had been advised by an insurance agent that they didn't need the protection, and providers whose homeowners insurance could not be extended to the FDC liability. About six percent of the responses were "never thought about it" or "keep putting it off." Only 8.5 percent of the responses attributed failure to buy insurance to the fact that Illinois licensing standards do not require it.

A total of 94 providers reported that they had attempted to buy liability insurance in the past year. Fifty-one of those providers or 54 percent reported a total of 53 problems in making a purchase. Restrictions on policies or strict underwriting guidelines accounted for 25 of the problems: the majority of the rest of the problems related to cost. Other problems described the difficulty in getting information or in communicating with an insurance agent. The Illinois Department of Insurance survey (Illinois, 1989) reported that 47 percent of their respondents had encountered problems in purchasing or renewing liability insurance.

Marketplace Intervention by State Regulatory Agencies

Most states have responded in some way to the marketplace problems now associated with liability insurance for FDC providers. Some states formed task forces during or immediately after the liability insurance crisis; in some cases, the task force was disbanded after the completion of a report. Other states have actively sought solutions. Those solutions include Market Assistance Plans, Joint Underwriting Associations, mandatory caps on premiums, and mandatory policy renewal regulations.

Market Assistance Plans or MAPs were formed in 28 states. A MAP was usually defined as an unincorporated association of insurance companies formed to provide a given line of insurance. However, MAPs have generally not been seen to be effective and most have been disbanded (U.S. Department of Labor, 1989).

Joint Underwriting Associations or JUAs were formed in Minnesota and New Mexico for child care. JUAs are basically mandatory versions of MAPs, with carriers required to join if they want to continue to write coverage in the state. The insurance industry considers JUAs "a disaster," largely because they were mandatory (U.S. Department of Labor, 1989).

At least seven states have placed mandatory caps on premium increases. However, the impact may be negative if insurance companies that are forbidden to increase premiums choose to cancel the policy instead. One-half of the states impose mandatory policy renewal regulations to protect child care providers from cancellation. Some other states require notification and a hearing before a policy can be canceled (U.S. Department of Labor, 1989).

Many states have grant and revolving loan funds. These funds can be used to assist child care facilities in start-up and operation, including paying insurance premiums. However, in some states funds may be available only to assist operators of child care centers and not to FDC providers.

The Role of Family and Consumer Economics Educators

The review of the market indicates that commercial liability insurance is available to family day care providers and that insurance through a homeowners insurance policy is available from some companies. However, some providers may find it difficult to meet the underwriting guidelines of some companies. Homeowners insurance underwriters were especially cautious about insuring FDC providers. Comments such as "we only write the insurance if it isn't a 'real' business" were common. Other underwriters expressed concern about the unpredictability of children, explaining that "in the eyes of a judge and jury, children are never responsible for what they do." Many FDC providers would find a homeowners insurance endorsement unavailable because they exceed the company's children-in-care limit. Eighty-eight percent of providers in the survey cared for more than three children; the 44 percent that cared for more than six children would be ineligible for all homeowners endorsements. Whether liability insurance is affordable depends on several factors including the income generated by the day care operation and the risk-taking attitude of the provider. However, even if a provider considers the insurance affordable, there are several significant barriers that could prevent even the most conscientious provider from seeking coverage.

One important barrier is the perception that liability insurance is generally unavailable to family day care providers. Most of the recent publicity about liability insurance has focused on the negative aspects - increasing costs and decreasing availability. A second barrier is the perception that a family's homeowners insurance policy automatically extends coverage to the family day care business.

A third important barrier is the limited knowledge of insurance agents and the insurance industry in general concerning family day care homes. Agents and underwriters interviewed for this research sometimes did not know what a family day care home was. Even the executive director of an Illinois trade association for insurance agents professed ignorance concerning the availability of liability insurance for family day care providers. Contacts at the Illinois Department of Insurance were similarly unproductive; the list of providers supplied included only companies that write commercial policies and most were available only to day care centers, not to family day care providers. No printed information was available about obtaining liability coverage through homeowners insurance; nor was there a list of companies that write such endorsements.

Thus, family and consumer economics educators can play an important role at four levels. The first is to provide education to family day care providers. A review of the insurance options available to providers would also need to include definitions of basic terms (rider, admitted companies, exclusion). Providers could read sample endorsements from homeowners insurance policies, a clause in a homeowners policy that excludes liability coverage for FDC, and sample commercial liability policies. Unless the information is available elsewhere, the educator may also need to do a market survey to learn what options are available.

Programming opportunities might be identified through child care associations in the state. Examples include associations affiliated with the National Association for Family Day Care, the National Association for the Education of Young Children, and the National Association of Child Care Resource and Referral Agencies.

Educators can also play an important role by working with child care professionals to educate the insurance industry. Involving local insurance agents in educational programs would enable the agents to learn more about child care providers. Educators may also be able to provide information for newsletters or programs to state trade associations for professional insurance agents or independent insurance agents.

Family and consumer economics professionals can also influence state policy. While marketplace intervention in many states has not proven to be very successful, educators might work with the state insurance department to increase the amount of information and assistance available to FDC providers seeking to buy insurance. Options for a risk retention group might also be explored; individual providers or provider organizations could form a group self-insurance pool and/or purchase a group insurance policy.

Finally, family and consumer economics professionals can provide much-needed research. Family day care homes are often not included in reports of accident or claim rates in child care facilities; when they are included, they are not reported as a separate and distinct group. Research is also needed to explore providers' knowledge of insurance options and actual insurance purchases. Researchers might also investigate whether the insurance industry's cautious approach to insuring FDC homes is justified. Another research area is the effectiveness of various types of marketplace interventions. Finally, researchers are challenged to learn more about the insurance knowledge and practices of providers who operate unregulated FDC homes.

References

Cheskis-Gold, R. (February 1988). Child care: What parents want. American Demographics, 46-47.

The Children's Foundation. (August 1989). 1989 Family Day Care Licensing Study. Washington, D.C.

BEST COPY AVAILABLE

Colorado Division of Insurance. (May 1989). *Special Report on Colorado Day Care Liability Insurance*. Denver, Colorado.

Fuqua, R.W. and D. Labensohn. (April 1986). Parents as consumers of child care. *Family Relations*, 295-303.

Gellert, S. (November 1988). *Who should care for infants and toddlers? A family day care perspective*. Paper presented at the National Association for the Education of Young Children Annual Conference, Anaheim, California.

Hofferth, S.L. (February 9, 1989). *What is the demand for and supply of child care in the U.S.*? Testimony presented before the House Committee on Education and Labor.

Illinois Department of Insurance and Illinois Department of Children and Family Services. (September 1989). *Liability Insurance and Day Care Operations*. Springfield, Illinois.

Morgan, G. (1987). *The National State of Child Care Regulation - 1986*. Watertown, MA: Work/Family Directions, Inc.

New Jersey Division of Youth and Family Services. (February 1986). *Liability Insurance Surveys*. Trenton, N.J.

Pave, I. (June 17, 1985). The insurance crisis that could cripple day care. *Business Week*, 114-116.

Steinberg, L.D. and Green, C. (Fall 1979). What parents seek in day care. *Human Ecology Forum*, 13-14, 38-40.

U.S. Bureau of the Census. (1990). *Who's Minding the Kids: Child Care Arrangements: 1986-87*. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Labor. (December 1989). *Employer Centers and Child Care Liability Insurance*. Washington, D.C.: U.S. Government Printing Office.

Efficiency and Equity in the Delivery of Public Education

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This paper uses existing evidence in the production of public goods literature to analyze the efficiency and equity with which public education is delivered under the usual school financing schemes. It also examines proposed school "choice" options. It is concluded that implementation of such options will have equity drawbacks mostly related to land value erosion.

The entering of the "baby-boomers" into their parenting life cycle stage has provided great impetus for the demand of goods and services related to child-rearing. One such service is education. The purpose of this paper is to frame public education in the context of consumer demand and to address some efficiency and equity considerations that arise from the way in which it is produced and allocated.

Education is a good with private and public characteristics. When a child is educated, he benefits directly. But so also do other members of society. Thus positive externalities arise from education. Because consumers do not take into account the value of this external effects when deciding how much education their children should obtain, in the absence of social intervention, less than the socially desirable amount of education will be consumed. Following the above reasoning, the case has been made for the need of publicly supported education (Heyne, 1987). It has been argued, however, that while the justification exists for publicly supported education, there is no reason why such support must translate into the current system of public education (Lieberman, 1989).

Considerable controversy exists as to the form that support for public education should take. The current debate about the equity and efficiency with which public education is allocated comes from two basic issues: school financing and the monopoly that local public schools are given over the supply of publicly funded schooling.

Public School Financing

The government is the major supplier of education in the United States with about 90 percent of primary and secondary school students attending public institutions. Total educational expenditures are almost $250 billion per year (Hyman, 1990), a figure corresponding to 6.1% of the Gross Domestic Product. After national defense, education is the largest government expenditure; however most of this is by state and local governments, with the federal government playing a minor role (Rasell and Mishel, 1990).

School districts are financed primarily by local real estate taxes. But, at the same tax rates, districts with affluent populations (more expensive real estate) can collect more in taxes than districts with poorer residents, so wide disparities are often observed in the level of public expenditure per student. To help offset this disparity in financing, most states will subsidize poorer school districts. Some states use a "foundation" plan in which local districts are guaranteed a minimum level of expenditure per student provided that the district meets a minimum property tax rate schedule. Other states use a "district power equalizing system", which guarantees a given level of revenue from each percentage point of property tax. If the district does not collect the guaranteed amounts from each percentage point of tax rate, the state makes up the difference. While both systems ensure a minimum level of funding, neither prevents the wealthier districts from spending substantially more than the minimum, nor forces local electors to raise tax rates to meet state requirements.

School districts, the sole providers of publicly funded elementary and secondary school education, rarely allow their constituents to either choose a school to attend or influence curriculum. Children are generally assigned to a particular school on the basis of home address. Since neighborhoods tend to be segregated on the basis of wealth, race, ethnic origin, etc., the result has been segregated schools. Segregation that follows racial patterns has long been successfully challenged in the courts as being unconstitutional and has resulted in a patchwork of remedial programs, the most notable of which is busing.

Busing is a program to transport children across neighborhood lines so that public schools reflect the racial composition of the community at large rather than that of particular neighborhoods. This has, however, resulted in discrimination against low income students. In most states, children are required to attend school, private or public, up to a certain minimum age, usually 16. If families cannot afford either private education or a move to another school district, busing results in the forced transportation of children to schools they would not choose to attend. This has resulted in emigration from school districts that are socioeconomically and demographically heterogeneous to those that are more homogeneous. Thus, the perverse result of busing has been the homogenization of whole school districts (Clotfelter 1975, Coleman 1975).

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The Production of Public Education:

Local school districts tipically play no role in determining the level of expenditures, which is usually set at the state and/or local budgeting process, so, it can be safely assumed that school districts maximize a social output function F(.) subject to their state-determined budget. Notice that the arguments in F(.) need not be restricted to scholastic achievement, some communities will place a value in social/racial integration, in the performing arts, or in high school athletics. School boards are usually elected and so to some degree they must answer to their constituencies.

More formally let ω be a vector of community characteristics in F(.), π a vector of nonpurchased inputs (child's own learning potential, own parents, etc.), ρ a vector of factor prices for purchased inputs, ς a vector of purchased inputs, ϵ the budget, and q a measure of achievement, given by:

(1) $q = F(\omega, \varsigma, \pi)$

which is maximized subjet to:

(2) $\epsilon = \rho.\varsigma$

the solution to the above maximization problem is given by:

(3) $\max L = F(\omega, \varsigma, \pi) - \mu(\rho.\xi)$

following Dynarski, et.al.(1989) the solution to (3) yields the demands for purchased inputs as a function of the levels of community characteristics, nonpurchased inputs, factor prices, and the school's budget, so:

(4) $\varsigma^{\times} = \varsigma(\rho, \omega, \pi, \epsilon)$

where $\varsigma^{\times}$ is the demand for purchased inputs at optimum. Thus the production function can be written as:

(5) $\theta(\omega, \rho, \pi, \epsilon) = F(\omega, \varsigma^{\times})$

Dynarski, et.al. (1989) have empirically estimated the above model and concluded that the income elasticity of education achievement may be much larger than the income elasticity of education expenditure. Thus suggesting that economic differences in student-body background can only be compensated by large variations in spending because expenditure in purchased inputs has a small impact on achievement as compared to community characteristics. Thus the impact of equalizing spending across districts is likely to be minor. Most interestingly, they found that "expenditure is marginally more productive in districts whose local characteristics work against achievement".

Additional evidence suggests that the attainment of a desirable level of quality in public education for a child is a function of characteristics of the student himself (intelectual potential), his or her familial background, the characteristics of peers or other students, and the level of public expenditures (Hanushek 1986, Project STAR 1990). Furthermore, there is strong empirical evidence that suggests that a child with personal and familial chraracteristics that puts him at risk of academic failure, greatly enhances his chances of achievement, if he or she is placed in the company of children with personal and familial characteristics that marks them for success. The reverse is not true however, the bright child with caring parents will achieve regardless or peers (Hanushek, 1986).

What the above mentioned findings suggest is the existence of positive consumption externalities generated by bright children and caring parents, which can only be captured by society through the presence of children without such characteristics. In the absence of such children the positive externality is lost. Total product can only be maximized if the proper mix of children exists. M. de Bartolome (1990) suggests that the captured value of the externality is maximized when "peer effects" are neither "too strong" nor "too weak".

The Consumption Of Education:

The consumption of education can be analyzed from the perspective of the community or from the perspective of the individual household. I will first examine the community perspective.

Education has the characteristics of a public good, which can be defined as a good such that no individual's consumption of such good leads to no substraction from the consumption of the same good by any other individual. Notice that the term consumption is broad, meaning that the consumption of the public good can take different forms for different individuals. In the particular case of public education, individual x_i may consume it by enjoying a reduction in criminal activity, while individual x_j may consume it by converting it into human capital. The collective demand for public goods is obtained by vertically adding the demands of the individuals in the collectivity. The problem of deriving such demand is that rational consumers find it in their best private interest not to disclose their own demands for collective goods. Thus a private market allocation would fail to provide the socially desirable amount of the good (Heyne, 1987).

It has been argued in the Public Finance literature that the provision of some public goods such as: education, police and fire protection, emergency medical services, etc. is best handled at the local community level where market mechanisms will operate to insure that expenditures on these public goods approximate the optimal. Tiebout (1956), in a seminal paper on the markets for public ammenities, concluded that:

> "For a substantial portion of collective or public goods, this problem (a decentralized price system determining optimally the levels of collective consumption) does have a conceptual solution. If consumer-voters are fully mobile, the appropriate local governments, whose revenue-expenditure patterns are set, are adopted by consumer-voters."

The implication thus, is that as long as consumers "vote with their feet" by moving to the community that best meets their demands for publicly supplied goods, the market will supply the correct amount of such goods. In Tiebout's model, local communities with homogeneous tastes for public goods rather than individuals, make the markets for such goods.

Tiebout's hypothesis which has been the cornerstone of the theory of local finance (Schwab and Oates, 1990) has recently become the target of some criticism (M. de Bartolome 1990, Dynarski, Schwab, and Zampelli 1987). This criticism arises because, while it is possible that homogeneous communities may lead to efficient consumption, efficient production may require heterogeneity. Overall efficiency may thus require a balance between the two objectives (Schwab and Zampelli 1987). In the previous paragraphs I have addressed how the household's utility function enters into the social utility function, in the following section I address issues related to the household's utility function itself.

As a private good the analysis of the demand for public education is closely tied to the demand for housing, because in the great majority of instances the allocation of public inputs and peers is largely determined by the location of the housing unit. At the same time the location decision faced by a consumer is likely to be influenced by the quality of alternative public schools.

Housing is generally viewed as a package of consumption goods in which things such as shelter, congenial neighbors, public services, and prestige are bundled. Consumers can not, in general, adjust their housing decision to exactly meet their tastes for each of the components of the bundle, because in some cases the property rights to such components are not alienable. Property rights are thus capitalized in the value of the house itself. In the case of public education for instance, homeowners cannot sell the right to attend the neighborhood's public school to people living in a different neighborhood to a household that might value it more. If a household wishes to send his children to a public school other than the one that has been designated for it on the basis of the house's location, the household would have to move. Such move would entail the payment for an entire bundle of neighborhood-dependent ammenities, some of which he may not care for. Also transaction costs (moving) are relatively high and work against optimal adjustment.

Soberon-Ferrer and Verma (1990) have presented evidence in support of the capitalization theory presented above. They found a simultaneous relationship between property prices and the quality of public education. Higher property prices were found to be conducive to better public schools. And better public schools were found to lead to higher property prices. Their findings also support the notion that an individual's education has an important externality which is capitalized in land prices. A higher median level of education in a neighborhood results in higher property prices. Consequently, children in more affluent neighborhoods have peers whose parents are more educated.

This marginal effect of the of public schools on housing prices lends support to the argument that the probability of receiving a quality public education is tied to the capacity of the family to invest a monetary premium in a house, and that the larger the premium the better the quality of the public education.

Policy Considerations and Implications

The equity implications of the prevalent scheme of public education allocation are serious, because a system emerges that discriminates against the poor when families cannot send children across school/neighborhood lines. Furthermore, the tug-of-war that one normally finds between efficiency and equity is not at play in this instance.

Consumption inefficiencies result when the consumption of education cannot be marginally adjusted, because under the usual school assignment scheme, education comes in a bundle of neighborhood amenities. Some of these amenities may not be wanted at the asking price, but if a given quality of education is desired, such amenities must be purchased to avoid forgoing the desired quality of education. This indivisibility hampers the capacity of lower income families to consume the desired quality of public education because their capacity to marginally adjust their consumption is limited by their income.

Other examples of publicly-supplied goods with intensity of use restricted by income are not uncommon (airports and marinas are two such examples). Yet many people find discrimination in public education objectionable, as it is perceived to further enlarge the endowment gap between the rich and the poor. A recent study on school financing issues (Salmon and Verstegen, 1990) points out that: "For children living in less affluent school divisions, an equal educational opportunity remains a cruel illusion reserved for those who begin life with greater economic advantage".

Additional inefficiencies result when the positive externalities due to "peer effects" are wasted due to the student body homogeneity that results when school and peer assignments are made based on place of residence.

Recently, this economic discrimination has been successfully challenged before the courts as being unconstitutional. As a consequence, school financing schemes have been overturned in Montana, Kentucky, and Texas (P. Baker 1990, D. Moranis 1990).

So far remedies suggested by the courts address only the issue of school financing and suggest different redistribution schemes by which poorer districts will get a more equitable share of monies. However, the issue in education concerns the quality of output rather than the amount of input. It is not clear from the literature on the production of education whether more money will translate into a better education; the empirical evidence on this point is contradictory (Hanushek 1986, STAR project

1990). Furthermore, based on Dynarski, et.al. one would have to conclude that equalizing expenditures across districts will not equalize access to quality, because as they found expenditures have an small impact on achievement as compared to community characteristics. The issue of discrimination, as I think it should be addressed, refers to children having access to schools that provide a satisfactory level of output without regard to family economic capacity.

Additional equity considerations stem from the effects that changes in current policies would have on property values. The existing evidence clearly suggests that the privilege of attending a public school which engenders a high degree of satisfaction is capitalized into the value of real property. However, policy changes could disallow such capitalization either by: (i) opening up the school to any child regardless of where this child lives, (ii) taxing the amenity, or (iii) a system of vouchers or tax credits that could be used to pay for schooling in either public or private schools.

A policy change that gives the opportunity to attend the school of choice to any child will decapitalize the existing exclusive right from the value of real estate. A dilemma similar to the one posed by McKenzie[2] is present. On the one hand, continued regulation of access to public schooling means higher effective prices for consumers of public education and a lower total social product. On the other hand, deregulation enhances total social product and eliminates discriminatory barriers, but it also means a capital loss for current homeowners in neighborhoods where the "good" schools are. Additionally, to the extent that homes in different neighborhoods are substitutes, we would expect real estate prices to decrease.

Currently, nine states allow families to send their children to any school in the state. To my knowledge, no systematic study has been undertaken to compare the level of satisfaction with public schools in such states with the level of satisfaction with public education in states where such choice does not exist. It would also be of interest to quantify the impact of "choice" on property prices.

A variant to the open access policy would result in the creation of more schools in the neighborhoods with the "good" characteristics, and opening access to limited numbers of children from the disadvantaged neighborhoods. This policy would then be in keeping with M. deBartolome's finding (1990), that the optimal mix exists where the "peer" effect is neither too strong nor too weak[3]. This variation to open access somewhat resembles the admission process at selective colleges. While it has the advantage that property prices are not severely affected, it has the disadvantage of limiting the number of children receiving equal opportunity.

Under the alternative policy (ii), the capitalized quality of a neighborhood's public school would be taxed away by the government by making property tax rates a function of the quality of the amenity. This tax could be then spent in other less desirable school districts. This would be justified on two grounds: (i) spending the tax monies back into the neighborhood would offset the effect of the tax as the expenditure would be capitalized back into the property, and (ii) it would increase the perception of fairness. Oates (1969) found evidence that "for an increase in property taxes unaccompanied by an increase in the output of local public services, the bulk of the rise in taxes will be capitalized in the form of reduced property values". So, just as with the open access policy, the taxing alternative results in a decrease in property values. However, to the extent that the collected taxes in the educationally better-off neighborhoods would be transferred to the other neighborhoods, property values could probably rise in the latter.

Also, in keeping with the findings of Dynarski, et.al.(1989), that the major influence in acdemic achievement seems to be related to community composition, this transfer, if it is to result in equality of opportunity, would need to be large enough, so that the expenditure per student in the worse-off districts would be superior to the expenditure per student in the better-off districts. This transfer would result in the improvement of the quality of public schools in the subsidy receiving districts. In keeping with Soberon-Ferrer and Verma (1990) the increased desirability of the public ammenity in the previously worse off district would also result in an increase in property values in such districts.

A policy of vouchers or tax credits has been discussed extensively elsewhere (Lieberman, 1989). Under this policy, parents who preferred a private school would receive a tax credit or a voucher which could then be used to send their children to the private school of their choice. The voucher or tax credit would not need to cover the full cost of tuition, so in the event of a shortfall, the parents would have to cover it. This option, while allowing for a more competitive use of resources, has some drawbacks, among them: (i) There would still be a negative effect on real estate prices as with the former two options. This would happen as parents wishing for an alternative to their neighborhood public school would not have to bid for a house in a preferred school district if a private school exists that satisfies their wants; (ii) Private schools that participate in these programs would almost surely have to be non-sectarian, as legal issues involving the use of public monies to further religion would first have to be resolved; (iii) It might have an impact on the issue of fairness. The amount of the voucher or subsidy, as has often been proposed, would be the same to everybody; thus, wealthier parents could supplement the voucher/credit to pay for tuition at "expensive" schools. Again, it is not a case of the public being opposed to parents spending as much as they wish on their children's education, but of using public monies to do so. A voucher with its value inversely related to taxable income would also seem unfair, as the government would not be providing equality of access, though in this instance the discrimination would be against the high income students. To the extent that high income is correlated to the familial characteristics which are conducive to academic success, such reverse discrimination would result in the poorer students being denied the positive externality that results when the higher income student becomes their academic "peer". This is an inefficient result.

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[2] McKenzie (1980) found that the exclusive right to a natural gas connection, which was necessary in order to allocate scarce natural gas supplies due to regulated prices, had been capitalized into the value of the homes that had such exclusive right. When natural gas prices were deregulated and the right to connect to natural gas was extended to every homeowner the capitalized entitlement dissapeared thus reducing not only the value of homes with existing connections, but of other homes as well.

[3] Oates and Wallace (1990), suggest that when heterogeneity in consumption is desirable from a wider perspective (state, national), the central authorities would have to "bribe" the local communities possesses "good" externality generating characteristics into accepting members of other communities to share their services. This would then internalize the externality on the supply side. Under the alternative being proposed, this could translate into higher subsidies to the community for local services.

Frank (1985) raises an interesting objection to a voucher system, he argues that such a system would unleash an educational rat race of unprecedented proportions. He points out that currently the price difference between the public and private school choice is wide enough so that middle and low income parents are insulated from competitive pressures, as parents can provide their children with numerous other advantages with the money saved from the payment of tuition. With so many good students being induced to remain in public school, being a student in public school has not become synonymous with failure. Also, I would add, when enough good students remain in public school "peer" effects become significant. Under a voucher system, on the other hand, there would be advantages of spending slightly more to give one's child a slight advantage. But one student's advantage is another's disadvantage. The parent of now disadvantaged student would feel forced to spend more in education just to keep his child even. Thus Frank's rat race would get going.

Concluding Remarks:

The current system of allocating public education is inefficient and inequitable. Much of the problem arises from the connection between property prices and the quality of public schools. This relationship largely prevents poorer children from having access to a quality public good. However, solutions that have been explored to remedy such perception and to equalize educational opportunities within the public schools have drawbacks.

Current efforts to improve the quality of public schools which have been pursued by the educational establishment have focused on the level of inputs that relate to higher expenditures (lower student/teacher ratios, more equipment, higher salaries) even though extensive research has failed to conclusively show that higher levels of such inputs will result in better quality schools.

The "choice" option that would allow families to send children to schools of their choice, public or private, at the government's expense has recently received more attention as it has been advocated not only by the current presidential administration but by parental organizations as well. "Choice" policies, however are not without drawbacks as they would probably result in a massive transfer of wealth away from real property. Voucher/tax credit policies could also negatively affect the perception of fairness and equity in education.

A policy to transfer resources from the better-off educational districts to the disadvantaged districts by taxing the quality of public schools was discussed. It is proposed that such a policy would result in a more efficient allocation of public resources, as the public rather than property owners would be capitalizing on the quality of the schools. This policy would also increase the perception of fairness as resources would flow from the haves to the have-nots.

References

Baker, Peter. "Poor Schools Grow Poorer, Va. Study Says." Washington Post . January 26, 1990. pp.Cl.

Boardman, Anthony E., Davis, Otto A., Sanday, Peggy R. "A Simultaneous Equation Model of the Educational Process." Journal of Public Economics [illegible] (1977):23-49.

Borsch-Supan, Axel, and Pollakowski, Henry O. "Estimating Housing Consumption Adjustments from Panel Data." Journal of Urban Economics.27 (1990):131- 150.

Bowles, Samuel and Levin, Henry M. "The Determinants of Scholastic Achievement-An Appraisal of Some Recent Evidence" Journal of Human Resources. 3, no.1 (1968):3-24

Brown, James N., and Rosen, Harvey S. "On the Estimation of Hedonic Price Models." Econometrica. 50, no.3 (1982):765-768.

Clark, David E., Cosgrove, James C. "Hedonic Prices, Identification, and the Demand for Public Safety." Journal of Regional Science. 30, no. 1 (1990):105-121.

Clotfelter, Charles T. "The Effects of School Desegregation on Housing Prices." Review of Economics and Statistics. 57. (1975):446-451.

Coleman, James S. et al. "Recent Trends in School Integration 1968-1973." The Urban Institute. Washington, D.C. Paper number 722-03-01. (1975).

Cropper, Maureen L. "The Value of Urban Amenities." Journal of Regional Science. 21, no. 3 (1981):359-374.

Cropper, Maureen L., Deck, Leland B., and McConnell, Kenneth E. "On the Choice of Functional Form for Hedonic Price Functions." The Review of Economics and Statistics. (1988):668-675.

Dubin, Robin A., and Sung, Chein-Hsing S. "Specification of Hedonic Regressions: Non-nested Tests on Measures of Neighborhood Quality." Journal of Urban Economics. 27,(1990):97-110.

Dynarski, Mark, Schwab, Robert, and Zampelli, Ernest. "Local Characteristics and Public Production: The Case of Education". Journal of Urban Economics. 26 (1989):250-263.

Eberts, Randall W., Schwartz, Kehoe E., and Stone Joe A. "School Reform, School Size, and Student Achievement" Economic Review.26, no. 2 (1990):2-15.

Frank, Robert H. Choosing the Right Pond. Oxford University Press. New York, (1985):206-213.

Grether, David M., and Mieszkowski, Peter. "The Effects of Non-residiential Land Uses on the Prices of Adjacent Housing: Some Estimates of Proximity Effects." Journal of Urban Economics. 8, (1980):1-15.

Gyourko, Joseph and Tracy, Joseph. "Local Public Sector Rent-Seeking and its Impact on Local Land Values." Regional Science and Urban Economics. 19 (1989) 493-516.

Hanushek, Eric A. "The Economics of Schooling." Journal of Economic Literature. 34, no. 3 (1986):1141-1177.

Heyne, Paul. The Economic Way of Thinking. 5th ed. SRA pub. Chicago, Ill.1987.

Hilley, John. "The Distributive Impact of Educatio Finance Reform." National Tax Journal. 36, no. 4 (1983):503-509.

HUD. "Codebook for the Annual Housing Survey Database" The Department of Housing and Urban Development. Washington, D.C. 1988.

Hyman, David N. Public Finance. Third Edition. Dryden Press, New York (1989):331-336.

Jud, Donald G., and Watts, James M. "Schools and Housing Values." Land Economics 57, no. 3, (1981):459-470.

King, Thomas A. "The Demand for Housing: A Lancastrian Approach." Southern Economic Journal.,43 (1976):1077-1097.

Lancaster, K. "A New Approach to Consumer Theory." Journal of Political Economy. 74, (1966):132-157.

Lieberman, Myron. Privatization and Educational Choice. St. Martin's Press. New York, (1989):57-84.

Lucas, Robert E.B. "Hedonic Price Functions." Economic Enquiry. 13, June (1975): 157-178.

McKenzie, Richard B. Economic Issues in Public Policies. McGraw-Hill, New York. (1980):76-91.

Moraniss, David. "Texas Fails to Enact School Plan." The Washington Post. May 1, 1990. pp A3.

Muellbauer, John. "Household Production Theory, Quality, and the "Hedonic Technique". " The American Economic Review. 64. December (1974):977-994.

M. de Bartolome, Charles A. "Equilibrium and Inefficiency in a Community Model with Peer Group Effects." Journal of Political Economy 98, no. 1 (1990):110-133.

Oates, Wallace E. "The Effects of Local Property Taxes and Local Public Spending on Property Values: An Empirical Study of Tax Capitalization and the Tiebout Hypotbesis" Journal of Political Economy. 77 (1969):957- 971.

Palmquist, Raymond B. "Estimating the Demand for the Characteristics of Housing." Review of Economics and Statistics. 66, August (1984):394-404.

Rasell, Edith M. and Mishel Lawrence. "Shortchanging Education." Economic Policy Institute Briefing Paper. (1990), Washington, D.C.

Roback, Jennifer. "Wages, Rents, and the Quality of Life." Journal of Political Economy. 90, (1982):1257-1278.

Rosen, Sherwin. "Wage-Based Indexes of Urban Quality of Life." in P. Mieszkowksi and M. Straszheim (eds.), Current Issues in Urban Economics. Baltimore,Md.:Johns Hopkins Press, (1979).

Schwab, Robert M., and Oates, Wallace E. "Community Composition and the Provision of Local Public Goods: A Normative Analysis." Working Paper Series; University of Maryland. Department of Economics.90-4 (1990).

Schwab, Robert M., and Zampelli, Ernest M. "Disentangling the Demand Function from the Production Function for Local Public Services: The Case of Public Safety" Journal of Political Economy. 33 (1987):245-260.

Skinner, Jonathan. "Housing Wealth and Aggregate Saving." Regional Science and Urban Economics. 19 (1989):305-324.

Soberon-Ferrer, H., and Verma, S.K. "Analysis of the Connection Between Perceived Quality of Public Schools and Property Values" Paper presented at the XXX Atlantic Economic Conference. Williamsburg, Va. October,1990.

STAR. Project STAR Final Report. Tennessee State Department of Education, Nashville, Tenn.

Tiebout, Charles M. "A Pure Theory of Local Expenditures." Journal of Political Economy. (1956):416-424.

A Dialogue Among Users and Producers of CEX Microdata: A Summary of the Workshop from the Producers' Viewpoint

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The purpose of the workshop was to discuss with researchers their use of the Consumer Expenditure Survey public use tapes and their problems with the tapes. Possible solutions were outlined. The workshop included five economists who have used the Consumer Expenditure Survey public use tapes extensively in their research: Janet Wagner, University of Maryland, Pamela Norum, University of Missouri, Jeanne Hogarth, Cornell University, and Mark Lino, U.S. Department of Agriculture. Jane Kolodinsky, University of Vermont, was unable to attend but sent her remarks which Pam Norum presented.

The workshop was informative to the producers of the tapes in that it provided many ideas for improving the format and variables on the tapes. These comments can be summarized into three main categories: 1) changes we can investigate for implementation on the 1991 tapes, 2) changes that require further research by BLS and may take longer to implement, and 3) changes that would require questionnaire design or sample changes.

Possible 1991 changes

Offer the option of purchasing the data files as SAS datasets. Preliminary feedback from our systems staff indicates that this format would actually be easier to produce than the current format. We will test this option during the production of the 1990 tapes. If this format is satisfactory, we will offer it as an option for the 1991 tapes.

Variable changes on the family file. The "single parents with children under 18" category of the family composition variable could be separated into three groups-those with children under age 6, those with children ages 6 to 17, and those with children age 18 and over. This would match the breakdown of the "husband-wife with children" categories. The sex of the single parent can be determined by the sex of reference person variable.

We will investigate dividing the origin (ethnicity) variable into as much detail as the Census confidentiality rules permit. The same is true for reinstating more detailed occupation codes, as were on the 1980-81 tapes.

Changes that require research

Weighting. Discussions have begun concerning the development of longitudinal weights. These weights would account for consumer units being in the survey from one to four times.

Income. Currently, research is being undertaken that may lead to a procedure to impute missing income values. The definition of complete income reporters is also being analyzed.

Changes that require modification to the questionnaire and sample

BLS is currently investigating many ways to improve the accuracy of the expenditure reports, in particular, those that deal with recall issues. The goal is to shorten the questionnaire so that more time can be spent probing for accurate answers. Therefore the possibility of asking more questions is slight. The idea of a longitudinal sub-sample that covers more than five quarters is interesting, but faces funding problems. Letters to BLS that state your needs are encouraged and are considered during each revision of the survey instruments.

Patterns of Saving and Dissaving in Retirement Aged Households

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This paper explores retirees' patterns of saving and dissaving and the characteristics of savers and dissavers using the Social Security Administration's Retirement History Survey data. Five patterns are identified and the determinants of each pattern are explored.

Introduction

Demographic trends for the proportion of persons 65 and over, for labor force participation rates of persons 55 and over, and for life expectancies portend strains on both public and private resources supporting retirees. On average, assets generate about one-fifth of the income retirees receive. These assets, and the income they generate, are essential to the economic security of retirees in their ability to buffer retirement incomes against the effects of inflation. Savings and dissavings during retirement affect asset levels and the potential income from these assets. However, as dissavings has not been regarded as "income," it's importance in the "income portfolio" is unknown.

The primary purpose of this research is to explore patterns of savings and dissavings among retirement aged households and the determinants of those patterns. In the process, characteristics of savers and dissavers will be identified. Specifically, this research will identify and describe patterns of savings and dissavings over a number of years among retirement aged households and explore determinants of these patterns.

Previous Work

The vast majority of retirees (93%) have some sort of financial assets (Sherman, 1985); 92% have a checking or savings account and over half (52%) report holdings in money markets or CDs. Smaller proportions hold securities (30%) and IRA/Keogh accounts (16%). Relatively few retirees (25%) hold any real assets beyond an owned home; 87% of retired couples are homeowners, with one-third of these still paying on a mortgage.

The asset portfolio of older households changes with age; as households grow older, they seem to grow more conservative, shifting funds to low risk, highly liquid holdings (Hogarth, 1987). There is some evidence that households contemporaneously consider their entire portfolio as then liquidate, dissave and re-arrange assets.

Radner (1989) reported that net worth holdings of persons 55 and over shifted from other assets (primarily real estate and income properties) to home equity and financial assets. Over time within the same household, larger proportions of financial assets were held in savings accounts with decreases in nearly all other financial asset holdings (Hogarth, 1987).

The life cycle hypothesis of savings specifies a profile in which persons borrow in early stages of their lives, save in middle stages and dissave in later stages. Empirical evidence shows some support for this dissaving-at-retirement hypothesis, however the dissaving occurs at lower than expected rates. Davies (1981) found persons aged 65 to 85 dissaved at a rate of 2.9 to 3.7% per year, a rate significantly lower than the rate of 7 to 9% predicted by the life cycle hypothesis. Similarly, Mirer (1980) found a median dissavings rate of 1.2%, using the saving/wealth ratio as the dependent variable and cross sectional data.

Bernheim (1987) used Longitudinal Retirement History Study (LRHS) data to focus on bequeathable wealth; he determined that bequeathable wealth declined rapidly (3 to 4% per year) for single individuals. Among couples, wealth of early retirees declined slightly (1 to 2% per year) or remained fairly constant over retirement. He also found that a fairly stable proportion of wealth was held as owner-occupied housing. He concluded that retirement aged individuals and couples did not dissave any significant fraction of their total resources.

Using the same data, Hogarth (1988) found that nearly half of retirees (46%) had higher financial asset holdings 8 years into retirement. Although over half the sample had some dissavings, nearly one-fifth (18.5%)

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dissaved at rates faster than predicted by actuarial life expectancies.

In summary, empirical results provide somewhat weak support with regard to life cycle effects and existing models provide limited information on patterns of asset decumulation. While the life cycle hypothesis indicates that dissaving should occur during retirement, rather low levels of dissaving have been found in empirical studies. Few of the studies provide any information on patterns of saving and dissaving during retirement and/or information on determinants of such patterns.

Methodology

Data for this project come from all six waves (1969 to 1979) of the Longitudinal Retirement History Survey (LRHS). The LRHS surveyed nearly 10,000 households with heads aged 58 to 63 in 1969 and every other year over the next 10 years. The design of this study requires that households be in the study for at least 3 waves so that savings and dissavings patterns can be followed. Therefore, the first step in sample selection was to identify households in the 1973 survey and match backwards (to 1971 and 1969) as well as forwards (to 1975, 1977 and 1979). Results of this study are based only on households which survived to and remained in the 1973 wave.

To identify the determinants of the various savings patterns, the model posited is:

Saving Pattern = f(LCE, Z, Mar, S) where LCE is a vector of life cycle and/or critical events in the life of the household, Z is a vector of socio-economic and demographic characteristics of the household, Mar is a vector of market factors which affect portfolio value apart from savings practices, and S is a vector of survivor/Mills ratios associated with the probability of surviving from one period to the next.

Variables

Constructing the Dependent Variables. Of interest in this study are the the survey-to-survey changes in the amount of total financial assets. Asset holdings were calculated by summing respondent and spousal asset holdings from: market value of house less outstanding mortgage; market value of farm less outstanding debts of farm; market value of business less outstanding debts of business; market value of other property less outstanding debts/mortgages on other property; value of US bonds held; value of stocks and bonds held; balances in checking and savings accounts; value of annuities; value of loans and mortgages held; value of life insurance. The sum of these holdings was defined as the total financial asset variable (A). The difference between survey year t and $t+1$ was the gross measure of savings/dissavings. This gross measure was refined by netting out the proceeds from the sale of owned housing as needed:

$$\text{Save/Dissave} = (A_{t+1} - A_t) - \text{House(if sold)}$$

It is important to note that only 7% of homeowners in the RHS actually liquidated their housing assets (sold their homes and became renters) between 1971 and 1979.

Change was measured as the difference in real values of total financial assets from one survey to the next (i.e., from 1969 to 1971, 1971 to 1973, and so forth). The reference year for real dollar values was 1969; the CPI was used to adjust to real terms. Any change under $100 or 0.5% was be deemed to be no change. This procedure allows the tracking of real changes in financial assets. It is also possible to track the nominal changes in financial assets. This would be of interest if households operated under "money illusion," but the real value of assets in terms of preservation of purchasing power is perhaps more relevant to retirees.

After assessing the series of changes in financial assets, a set of mutually exclusive saving patterns was developed as the set of dependent variables.

Independent Variables. Variables in the life cycle and/or critical events vector are onset of retirement, change in marital status (including death of a spouse), death of respondent during the survey period (the spouse remained in the survey), and migration as measured by change in home ownership.

Variables in the vector of socio-economic and demographic variables are household size and number of children at various points in the surveys, education of respondent and spouse, health, sex, and real income in various years. The combination of age, sex, and health variables acted as proxies for life expectancy. Health was measured subjectively as health compared to others.

Household income was measured as the sum of money received from social security benefits, pensions, workman's compensation, unemployment benefits, public assistance, earnings, rental property, interest and dividends, and business and/or farm income. Previous experience with this set of variables indicates that some missing and non-response values could be appropriately coded as zeros, while others were estimated using a set of predictor variables in a Heckman procedure.

Market-related variables were included to control for changes in portfolio values not due to savings practices. Year of retirement and net real values of assets in various years proxied some of the macro-economic events which could have affected savings/dissavings patterns.

A vector of survivor variables was added to the model. The probability of remaining in the survey from one period to the next was estimated and these probabilities were included in the model to control for sample attrition.

Results of Multi-Variate Analysis

There were no households who expeienced no change in assets, nor any who experienced continuous savings nor continuous dissavings. Two-fifths of the households had combinations of savings and level periods and one-fourth had a local maximum (Table 1). One out of six households had a local minimum, and another one out of 12 had a pattern of alternating saving and dissaving. Finally, one out of 25 households had a pattern which combined dissaving and level periods.

Table 1
Savings and Dissaving Patterns.

	% of Households with Pattern
1. Alternating Saving & Dissaving	8.5%
2. Local Maximum	26.9
3. Local Minimum	17.0
4. Some Saving & Some Level Periods	43.5
5. Some Dissaving & Some Level Periods	4.2

The objective of this project was to find the set of determinants which best fit each pattern of saving/dissaving. Although measures of various household characteristics across all survey years were included in the original models, variables from the early survey years (1969 through 1975) proved to be the best performing. Each pattern was modeled separately with a 0-1 dependent variable, which can be roughly interpreted as the probability of having each pattern. The OLS specification was chosen over a probit specification for ease in interpreting the coefficients.

In general, life cycle, socio-economic, market related and survivorship variables all were determinants of the savings patterns exhibited by households (see Table 2), although different sets of determinants emerged among the different patterns.

Alternating Periods of Saving and Dissaving. Among the life cycle variables, persons who experienced a change in marital status were more likely to have this pattern, which makes some sense. Becoming widowed may mean that insurance policies are paid out and savings may increase or that some sources of income are lost (e.g. pensions) and savings must be tapped to replace some income. Divorce also changes asset holdings, depending on the division of the estate. Persons who owned their home in 1973 were less likely to have this pattern. This may be reflective of the shifting of assets from real assets to financial assets with the sale of the house. However, there was no support for the homeownership variables in other years.

The probability of having this pattern was affected by having higher incomes in 1971 and higher net real asset holdings in 1971, representing socio-economic and market-related variables. It is interesting that income and assets from the same year achieved significance while income and assets from other years were not significant.

This pattern may reflect household responses to more macro variables, such as inflation rates, changes in Social Security policies, rising energy prices, and the like. Rising energy prices led to double digit inflation in 1974 (11.4%) and again in 1979 (11.5%). These periods of high inflation may have resulted in persons needing to dip into savings to maintain their level of living. At the same time, Social Security retirement benefits were made available to people at an earlier age (62) and thus some households may have found themselves "better off" and able to save over some years. In the future, it would be of interest to know if the periods of saving and dissaving lag or lead macro economic changes and how they related to people's expectations about the immediate past and forseeable future.

Local Maximum. The local maximum pattern is one in which household save for some consecutive periods and then maintain asset levels or dissave for

Table 2

OLS Regression Coefficients on Savings Patterns

(t values in parens)

	Alternating Saving & Dissaving	Local Maximum	Local Minimum	Some Save Some Level	Some Dissave Some Level
Intercept	10.231	37.772	5.940	-.227	2.909
	(1.38)	(3.31)	(1.10)	(.03)	(.71)
Life Cycle Variables					
Ret. Age	.003	-.022	-.003	.001	-.002
	(.65)	(2.65)	(.84)	(.34)	(.90)
Change in Marital Status	.013	-.084	.081	.061	.000
1969-71	(.36)	(1.47)	(3.03)	(1.84)	(.01)
Change in Marital Status	.060	-.007	.002	.048	.002
1971-73	(1.85)	(.14)	(.10)	(1.67)	(.16)
Death (during survey	.037	.014	-.013	.005	.017
period, 1969-1979)	(1.52)	(.37)	(.72)	(.23)	(1.26)
Own home, 1969	.055	-.115	.055	-.049	-.019
	(.74)	(1.00)	(1.01)	(.74)	(.47)
Own home, 1973	-.108	.155	-.099	.066	.031
	(1.75)	(1.62)	(2.20)	(1.20)	(.92)
Socio Economic Variables					
Household size, 1969	.000	-.016	.011	.020	.004
	(.04)	(1.14)	(1.65)	(2.42)	(.81)
Household size, 1973	.001	.000	.001	.001	-.008
	(.13)	(.01)	(.14)	(.08)	(1.35)
Number of children, 1969	-.004	.025	-.003	-.004	-.002
	(.62)	(2.12)	(.63)	(.63)	(.67)
Number of children, 1973	.005	-.016	.002	-.002	.001
	(.87)	(1.67)	(.48)	(.41)	(.55)
Resp. Educ.	-.000	.007	.001	-.004	.002
	(.22)	(1.40)	(.05)	(1.46)	(1.35)
Spouse Educ.	.004	-.009	.002	.004	-.002
	(1.22)	(1.58)	(.72)	(1.19)	(1.18)
Health in 1969	.015	-.027	.005	-.008	.009
(compared to others)	(.67)	(.79)	(.34)	(.44)	(.76)
Respondents Sex	-.008	.006	.001	-.040	.000
(1=male, 2=female)	(.34)	(.18)	(.06)	(1.80)	(.02)
Income, 1969	-.001	.012	.016	-.000	.016
(10,000s)	(.39)	(.42)	(1.23)	(.04)	(1.59)
Income, 1971	.031	-.036	-.000	-.000	-.025
(real, 10,000)	(1.69)	(1.28)	(.23)	(.25)	(2.52)
Income 1973	-.020	.025	-.011	.011	.000
(real, 10,000)	(1.48)	(1.19)	(1.19)	(.95)	(.06)
Market-related Variables					
Year of retirement	-.005	-.018	-.002	.000	-.001
	(1.43)	(3.19)	(1.07)	(.01)	(.68)
Net real assets, 1969	-.000	-.026	.016	-.000	.022
(10000)	(.15)	(5.58)	(7.55)	(1.39)	(13.12)
Net Real Assets, 1971	.005	.015	-.011	-.000	-.012
(10000)	(1.95)	(3.47)	(5.50)	(1.36)	(7.42)
Net Real Assets, 1973	-.002	-.018	.000	.022	-.000
(10000)	(.29)	(1.80)	(.46)	(3.88)	(1.31)
Suvivorship					
Prob. Alive in 1975	.002	.046	.046	.045	.024
	(.10)	(1.36)	(2.93)	(2.34)	(2.06)
R^2	.03	.06	.08	.06	.17
F value	1.62	3.33	4.28	3.00	9.73
Prob (F)	.03	.00	.00	.00	.00

the remaining periods. Retiring at an older age was associated with a reduced probability of having the local maximum pattern. This is as might be expected, since persons retiring later may have saved up more during their working years and begin spending down sooner. Owning a home in 1973 increased the probability of having a local maximum pattern. This might be expected if the sale of the home were associated with an inflection point.

A larger number of children in 1969 was associated with an increased probability of having a local maximum pattern, while a larger number of children in 1973 was associated with a lower probability of having a local maximum pattern. This may be a reflection of loans, subsidies, and gifts made to children as part of estate planning.

Retiring later over the 10 year survey period was associated with a decreased probability of having a local maximum pattern. As with the alternating pattern discussed above, this may be due, in part, to the cumulative effects of inflation over the period from 1969 to 1979, where the purchasing power of the dollar decreased by nearly one-half (using 1969 as 100, the CPI in 1979 was 198).

Higher real values of assets in 1969 and 1973 were associated with a decreased probability of having a local maximum pattern, while higher levels of assets in 1971 was associated with an increased probability of having a local maximum. Again, market factors may be at work here, resulting in people shifting from a savings to a dissavings mode in the face of higher-than-planned-for rates of inflation.

Local Minimum. With the local minimum pattern, households dissave over some consecutive surveys and then begin to level off or begin to save over the remaining periods. Experiencing a change in marital status between 1969 and 1971 was associated with an increased probability of having a local minimum pattern. In the case of widowhood, this change in marital status may mean that medical bills must be paid and/or some sources of income are lost (e.g., pensions) and savings must be tapped to replace some income before insurance policies are paid out and savings increases. Owning a home in 1973 is associated with a reduced probability of having a local minimum. This seems somewhat counter intuitive, since the longer one holds on to a non-earning asset, the more one would have to draw down other financial assets, thus increasing the probability of having a local minimum.

Larger household sizes in 1969 were associated with increased probabilities of having a local minimum. This is somewhat as expected, since larger households require higher levels of resources to keep them running, which in turn may indicate a need to draw down assets early in retirement.

Higher levels of net real assets in 1969 were associated with an increased probability of having a local minimum pattern, while higher levels of assets in 1971 were associated with a decreased probability of having the same pattern. It is possible that some households implement a dissaving plan early on, but then realize that they cannot continue dissaving at current rates and expect their assets to sustain them throughout their expected lifetimes, especially in the face of higher inflation rates. Thus, these households shift from a dissavings to a maintenance or increased savings plan.

Some Saving and Some Level Periods. This pattern is characterized by some periods (not necessarily consecutive) of savings and some periods of no changes in assets. There are no periods representing any dissavings in this model (contrary to the life cycle hypothesis) and that the majority of the respondents (43.5 percent) fall into this pattern. A change in marital status between 1969 and 1971 or between 1971 and 1973 was associated with an increased probability of having this pattern. In part, this may be a reflection of access to insurance resources available to widowed persons.

The larger the household size in 1969, the greater the probability of having this pattern. It may be that larger households have more workers and thus more earners and/or more retirement benefits resulting in higher incomes and less need to dissave. Also, there may be some economies of scale in larger households which permit lower per capita expenditures and reduced need to dissave. Being a female respondent reduced the probability of having this pattern. Since the only female respondents were either not married in 1969 or the widows of male respondents, this finding is as expected. Older females tend to have lower levels of income and assets and thus may be more likely to have a pattern with some periods of dissaving.

Higher net real assets in 1973 were associated with an increased probability of having this pattern. Higher levels of resources mid-way through the survey may be a reflection of careful asset management (especially in the face of inflation) and thus consistent with some saving and some level periods.

Increased probability of surviving to 1975 was associated with an increased probability of having this pattern. In part, it may be that surviving to 1975 is a reflection of good health and lower health care costs (with no need for dissaving). It may also be that persons who "made it" to 1975 also re-assess their life expectancies and adopt a set of savings and expenditure behaviors consistent with longer life expectancies; that is, they continue to save as a precaution against longevity and future health care costs.

Some Dissaving and Some Level Periods. This pattern is characterized by some periods (not necessarily consecutive) of dissavings and some periods of no changes in assets. There are no periods representing any savings in this model (contrary to the previous pattern) and that the smallest proportion of the respondents (4.2 percent) fall into this pattern. An increase in income in 1971 was associated with a decreased probability of having this pattern. This is as expected, since higher income levels might mean less need to dissave or draw down assets.

Higher levels of assets in 1969 were associated with an increased probability of having this pattern, while higher levels of assets in 1971 were associated with a decreased probability of having this pattern. The finding with respect to 1969 assets is consistent with the life cycle hypothesis; that is, households save up during working years in order to spend down in retirement. Thus, one might expect households with higher levels of assets to be able to afford to draw down assets and have some periods of dissaving during retirement. The result with respect to 1971 assets may be more a result of precautionary moves of households as they consider inflation, employment rates, and other market factors.

Increased probability of surviving to 1975 was associated with an increased probability of having this pattern. In part, this may be a reflection of living long enough to have time to spend down some assets.

Conclusions and Implications

The data present some mixed messages about households' savings behaviors. For example, in some cases household size seems to be associated with economies of scale and higher levels of resources (i.e., more persons bringing income to the household), but also a need for higher levels of resources to maintain their level of living. Also, while nearly three-fifths of the households exhibited some behaviors in support the life cycle hypothesis of dissaving during retirement, other households (43 percent) continued saving, perhaps as a precaution against longevity and future health care costs, desires to leave a bequest, or persistence of habit.

It is likely that there are cohort effects operating with this sample. Dissaving behaviors of other generations of retirees may be very different from this group, who may be influences by their experiences of the 1930's Depression. For example, the effects of a change in marital status, primarily becoming widowed, may have been mitigated somewhat by legislation providing for survivors' benefits from most pensions. It may be desirable to extend the requirement of the provision of survivors benefits to all retirement plans and systems, including state-run pension funds.

There is a need to know more about the behaviors of the "older-old" population (persons 75 and over). For example, health variables were not significant in this study, consistent with the expectation that the "younger-old" are healthier. It is necessary to learn more about older retirees to determine if changes in Medicare/Medicaid and other health policies are warranted.

Some consideration needs to be given to how owner occupied houses can be used as an asset. Policies which facilitate the availability of reverse annuity mortgages (such as the current Housing and Urban Development pilot projects) should be explored. Similary, an examination of the limited capital gains exclusion for households aged 55 and over may be worthwhile, given current real estate values in some sections of the country.

Educational efforts via the Cooperative Extension System should be made to help households understand subjective probabilities, realistically estimate longevity, and plan their retirement savings program accordingly. Furthermore, efforts to help retired households plan an appropriate dissavings program are needed.

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References

Bernheim, B.D. (1987) Dissaving after retirement: Testing the pure life cycle hypothesis. In Bodie, Z., J.B. Shoven, and D.A. Wise, Issues in Pension Economics. Chicago: University of Chicago Press.

Davies, J.B. (1981) Uncertain lifetime, consumption, and dissaving in retirement. Journal of Political Economy, 89(3), 561-577.

Hogarth, J.M. (1987b) Changes in asset resources during retirement. Consumer Economics and Housing Research Paper Series, No. 87-4, Department of Consumer Economics and Housing, Cornell University, Ithaca NY 14853.

Hogarth, J.M. (1988) Saving and dissaving in retirement. Proceedings of the American Council on Consumer Interests 34th Annual Conference, 19-25.

Mirer, T. (1980) The dissaving behavior of the retired aged. Southern Economic Journal, 46(4), 1197-1205.

Radner, D. (1989) Net worth and financial assets of age groups in 1984. Social Security Bulletin, 52(3), 2-15.

Sherman, S.R. (1985) "Assets of new retired-worker beneficiaries: Findings from the new beneficiary survey," Social Security Bulletin, 48(7), 27-43.

The Consumer Expenditure Survey: A Commentary

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The Consumer Expenditure Survey (CEX) of the Bureau of Labor Statistics (BLS) is one of the richest national household economic surveys available to researchers today. It contains a wealth of information on household characteristics, income, and particularly, expenditures. Although the CEX has many merits, there are issues regarding the data that BLS may want to consider and data users may want to keep in mind.

The CEX has two parts, an interview component and a diary component. The interview component covers overall expenditures, whereas the diary component primarily covers food and small item purchases. Expenditure data from the interview portion of the CEX are collected from approximately 5,000 consumer units each quarter over five consecutive quarters. Since the first interview is used for bounding purposes, expenditure data available per consumer unit are actually for four quarters. The sample is rotating so approximately one-fifth of consumer units interviewed are replaced by new units each quarter. Each quarter is deemed an independent sample by BLS bringing the total sample for a year to 20,000 consumer units for estimating aggregate expenditures.

To obtain annual expenditure estimates for consumer units, a researcher can employ one of two methods. Quarterly expenditures can be multiplied by four or households that participated in the survey for all four quarters could be selected and their expenses totalled. Researchers would find it helpful if BLS evaluated these methods and recommended which would be suitable for descriptive and multivariate analysis.

Lower income households are a segment of the population that deserves particular research attention. Data on these households from the CEX may contain severe underreporting of income or overreporting of expenditures. In 1989, the lowest income quintile of consumer units reported total expenditures of $12,119 and annual before-tax income of $5,720, indicating they spent over twice their annual income. BLS is currently examining this potential problem with lower income consumer units in the CEX. Until BLS makes specific recommendations, CEX users should apply findings for low income households with caution.

In the CEX, one household member reports on overall family expenditures. This reporting method may produce accurate results for expenditures paid by that member. However, reports for purchases made by other family members, particularly children, may be less accurate. Many parents may not be aware of how their teenage children spend allowance money or earnings. Data users should be aware of this when analyzing CEX data on expenditures typically made by someone other than the person reporting expenses.

CEX asset and debt data for consumer units differ from Survey of Consumer Finance asset and debt data (Federal Reserve Board). This information is gathered in a few overall global questions on the CEX. BLS needs to examine their data on assets and debts, and perhaps extend their questions on these variables.

Lastly, although cross-sectional data are appropriate for many research questions, other questions require longitudinal data. For example, how does the economic status of households change due to family composition changes such as divorce or the birth of a baby? To help answer such questions, BLS may wish to consider installing a longitudinal subcomponent to the CEX. A group of households interviewed in a year could be tracked over a multi-year period. Such a longitudinal component, combined with the cross-sectional component, would allow researchers to answer many more questions with the CEX.

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A Dialogue Among Users and Producers of CEX Microdata

Jane Kolodinsky, University of Vermont[1]

I have had the opportunity to work with the Consumer Expenditure Survey on two occasions. The first was for a project completed while I was a doctoral student at Cornell. The research was titled "Female Labor Force Participation and Expenditures on Food Away from Home" (Kolodinsky 1987). It utilized the 1980 diary portion of the CEX. The second, and more major use of CEX data was for a project supported by the Andrus Foundation, "Effects of Prices, Income, and Labor Force Participation on Expenditure Patterns of the Aged" (Kolodinsky and Walsh 1990). A portion of this project has been presented at these ACCI meetings as "Estimating Price effects in the Absence of Price Data: A Comparison of Elderly and Non-Elderly Households" (Kolodinsky and Walsh 1991). This research utilized the interview portion of the 1986 CEX and included use of the individual, family, and MTab files.

The following outlines a list of pros and cons of using the survey based on my experience.

PROS

1. Relative ease of using the survey if only one file at a time is necessary;
2. Relative completeness of variables necessary to compute a wage rate for individuals; and
3. Variety of expenditure categories for which data is available.

CONS

1. Incompleteness of income reporting;
2. Lack of continuity in the family composition variable;
3. Inability to isolate price effects; and,
4. Lack of regionality for the rural sample.

When I first chose the CEX for a project while in graduate school, I was impressed and relieved at the relative ease with which the data could be accessed and utilized. It was easy to become acquainted with the data. The codebook was also straightforward. When only one file is required, use of the survey entails reading the data and pulling off the variables needed. I would recommend the survey to novice researchers as in introduction to large scale, cross-section data sets.

For consumer economists who use the household production approach in their work, the CEX contains all variables necessary to compute a wage rate, or price of time, for those who work. It also contains variables associated with household productivity. This means that one is also able to estimate a reservation wage for persons not employed in the labor market when such a variable is necessary. Unfortunately, this pro of the data set is only as good as the con of incomplete income reporting.

The last pro concerns the number of expenditure categories. A researcher is able to examine expenditures on aggregate expenditure categories, such as food at home, as well as dissaggregate categories including such items as bakery items and the like. One can either build an aggregate category for the several individual items for which data is available or use categories already aggregated before the data is released.

A problem that arises time and time again, and is discussed at all of the sessions I have ever attended about the CEX at ACCI conferences in the past, is incomplete income reporting. For many respondents, income information simply isn't available. And, for many others, even a complete income reporter may have incomplete income reporting in total, given the definition of complete income reporter by the Bureau of Labor Statistics[2]. When using a household production approach, where the price of time is separated from non-wage income, incomplete "complete income reporters" may be included. Results of estimation using such respondents may be biased since either wage or non-wage income sources may not be reported for some persons. A common way to deal with this problem, and the manner in which we handled it in our research using an elderly sample, was to utilize total expenditures as a proxy variable for total income during a period. Our rationale was three fold: first, this approach takes care of discrepancies between reported income and spending. Second, income reported in a given year may be an inaccurate representation of income over time. Thus, total expenditures may be a better indicator of permanent income. This has implications for estimated consumption coefficients. Though not a perfect solution, there is some justification for using total expenditure.

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[2] A complete income reporter is one who has provided values for at least one of the major sources of income, such as wages and salaries, self-employment income, and social security income (U.S. Department of Labor 1987, p.7).

We were interested in various family types in our research: single and two adult households, as well as the presence of younger and older children in a household. These factors are important when one uses the household production approach as adult time may be substitutes or complements for one another, and the presence of younger or older children should have an impact on household productivity. We found, however, that reports of the presence of children of different ages was not comparable for single versus two adult households. The question in the family file (Consumer Unit Characteristics and Income) indicating family type is coded as follows:

1. husband and wife only;
2. H/W, own children only, oldest child under 6;
3. H/W, own children only, oldest child >5, <=17;
4. H/W, own children only, oldest child >17;
5. All other H/W families;
6. One parent, male, own children, at least one age < 18;
7. One parent, female, own children, at least one age < 18;
8. single consumers; and,
9. other families.

As we separated single and two adult households groups, we were unable to include comparable variables for children when we corrected for the sample selection bias that would occur if we included persons without a wage rate in our estimation of labor supply of the elderly.

A third problem with the data set, and another one which has been brought up repeatedly in sessions such as this one, is the inability to isolate prices from total expenditures on individual items. This problem was the impetus to our research in the project, "Effects of Prices, INcome, and Labor Force Participation on Expenditure Patterns of the Aged." However, the approach we took imposed many restrictions, including the assumption of additivity of a consumers utility function, and is only viable when one considers broad aggregates of commodities, as all goods are normal and substitutes for one another. The price effects are calculated and are not driven directly by the data. If there are biases in estimates obtained along the way to calculating price effects (including estimation reduced form labor supply functions, obtaining structural coefficients of the labor supply function, and estimation of expenditure functions), then the reliability and validity of the price effects obtained are questionable. Still, given the limitation of the data as far as prices paid are concerned, these price estimates are the best we can do at the present time.

Finally, if a respondent resides in an urban area, region of residence is reported. However, if a respondent resides in a rural area, no such region is given. Thus, one is able to include urban/rural dummy variables in estimation, or can use region only for the urban sample. It is understood that given the size of the rural sample, region can not be reported to conserve confidentiality. However, for our purposes, especially in future work, urban/rural, and region will become increasingly important. At the University of Vermont, College of Agriculture, we are taking on a mission in the 1990s to look at rural economic development. Use of large scale data sets such as the CEX lose some of their usefulness when one can not account for both region and urban/rural status.

Because the CEX has such abundant data about expenditures and economic and socio-demographic variables useful to consumer economists, I believe researchers tend to overlook some of the downsides of the CEX. We manage with what we have because there is nothing better. Results of reserach using the CEX tend to be quite robust in many instances. Being aware of potential problems is one way of overcoming any limitations of the data.

References

Kolodinsky, Jane (1987) Female labor force participation and expenditures on food away from home. in The Proceedings, 33rd Annual American Council on Consumer Interests Conference, Vickie Hampton, editor, pp. 175-80.

Kolodinsky, Jane, and Walsh, Roberta W. (1990) Effects of prices, income, and labor force participation on expenditure patterns of the elderly. Manuscript completed for the Andrus Foundation, June.

U.S. Department of Labor, Bureau of Labor Statistics (1988) BLS Handbook of Methods. Bull 2285, April, Superintendent of Documents: Washington D.C.